With compliments to:
Professor Asis Kumar Banerjee
Vice-Chancellor

B Banerjee
18/9/06

# International Finance and Accounting

*Edited by :*

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# Preface

The present research volume is a compilation of papers on two closely related and contemporary issues, International Finance and International Accounting, that comprise the thrust area prescribed for the purpose of research under the Third Phase of the Special Assistance Programme in Commerce granted by the University Grants Commission, New Delhi.

The volume contains thirteen research-based papers that were presented in the National Seminar of the DSA Programme in Commerce ($3^{rd}$ phase) held during March 25-26, 2006. The papers in the volume are almost evenly distributed between the twin research themes that focus keenly on various aspects of the broadly defined thrust area, International Finance and Accounting. Papers on International Finance deal with a number of contemporary and challenging global issues like Price and Volume Effects on Sensex, Pricing of New Economy Stocks, Credit Card Business, Imperatives of FDI, Treasury Management in a Globalized and Digitized Economy and Long Term Investment Decisions. The contributors of papers on International Accounting have hit upon the equally important global phenomena like Holistic Approach to Intellectual Capital, Global Compatibility of Indian GAAP, Revision of AS 15 for Better Compatibility, Valuation of Intellectual Capital, Transfer Pricing and e-Commerce, Tax Implications of International Transfer Pricing and Double Taxation Avoidance Agreement.

All the papers were presented first in the seminar referred to above, which was inaugurated by Prof. Asis Kumar Banerjee, Vice Chancellor, University of Calcutta. Many distinguished academics including Prof. Ranajit Chakraborty, Dean, Faculty of Commerce, Social Welfare and Business Management, University of Calcutta, Prof. P. Chattopadhyay, formerly of the University of Burdwan, Prof. D. N. Rao, Jawaharlal Nehru University, Prof. R. D. Sharma and Dr. Hardeep Chahal, University of Jammu, Prof. Shirin Rathore and Dr. Amitabh Gupta, University of Delhi, Prof. D. Pravakara Rao, University of Andhra and Prof. Ashis K. Bhattacharyya and Prof. Ashok Banerjee of the Indian Institute of Management Calcutta, attended the seminar. There is no doubt that the deliberations in the seminar helped the authors significantly to revise their papers before submission for blind review by experts on specific areas. As per the suggestions of experts, these papers again went through several rounds of revision for enrichment in terms of both content and quality. The instant volume will be a valuable addition to the existing literature on the subject.

We express our gratitude to the authorities of the University Grants Commission, New Delhi, for funding the publication of the present volume. We are deeply indebted to the Vice-Chancellor, Professor Asis Kumar Banerjee, for his encouragement and support. He has favoured us with a Foreword to this volume. Thanks are also due to the authors for their contributions and to other colleagues in the Department for their constant encouragement and support. We are also grateful to other members of the Editorial Board for review of the papers.

August 8, 2006

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## Foreword

It gives me great pleasure to write this Foreword to 'International Finance and Accounting', a research volume that relates to one of the thrust areas of the Special Assistance Programme (Third Phase) of the University Grants Commission in the Department of Commerce, University of Calcutta.

In the present globalized environment there is no doubt that international finance and accounting is area of great interest for the concerned academics, professionals and researchers. Finance and accounting are complementary to each other in many respects.

The volume contains many research papers that were first presented at the DSA National Seminar held on March 25 and 26, 2006. These papers were then reviewed, revised and edited in the Department. I believe the authors have dealt with many intricate areas and issues concerning international accounting and finance. The efforts are praiseworthy.

I wish the present volume will succeed in promoting further interactions and research in this vitally important field of research.

A. K. Banerjee
**( Prof. Asis Kumar Banerjee )**

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# Pricing of New Economy Stocks : A Comparison of USA and India

**Gagari Chakrabarti**[*]
**Anjan Chakrabarti**[†]
**Amitava Sarkar**[§]

## Abstract

With the information and communication technology revolution, the global economy is transforming from a low productive, manufacture based 'old' economy to a knowledge based, service oriented and highly productive 'new' economy. In this new era, composition of stock market has changed significantly with the new economy sector adding values to the stock markets. This article inquires whether this is the initiation of a new era of changed stock price behaviour at least in the context of the new economy stocks that characterizes all the financial markets experiencing e-revolution irrespective of their level of development. It confirms a special characteristic of new economy stocks that holds across countries.

***Key words*** : Financial Bubble; New Economy Stocks; Bombay Stock Exchange and NASDAQ.

## 1. INTRODUCTION

With the advent of e-revolution, the composition of stock market has changed significantly in countries that experienced e-revolution. The new economy sector, constituting of computer software and hardware firms, firms providing software and hardware services, telecommunication firms, media and entertainment firms, has come to dominate and to add values to these nations' stock market. There has been a consensus that the significant stock value increments in those countries are driven by the growth rate of the emerging new economy sector. Resultantly, this new situation has produced a new set of question.

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In this new economy, does a 'new mechanism' now rule so far as stock market is concerned? Is this really the initiation of a new era of changed stock price behaviour at least in the context of the new economy stocks that characterizes all the financial markets that experienced e-revolution irrespective of their level of development? We, in this article, inquire on the specific issue of whether the new economy stocks irrespective of the level of financial development across countries are showing similar pattern. This will confirm a special characteristic of new economy stocks that holds across countries.

The study selects two countries namely India and USA that experienced e-revolution and having different levels of development of stock markets. While the US financial market is one of most developed markets in the world in terms of activity and growth, the Indian stock market remains a relatively less developed financial market. Both the two economies are related substantially in terms of business transactions at least in the context of the emerging new economy sector. The study explores the trends in movements of the new economy stocks in the two countries and seeks to delineate common trends, if any, in the new economy stock price movement in the two countries. The presence of common trend will confirm the special character of the new economy stocks irrespective of the level of development of the financial markets.

1998-2003 is taken as the study period. This was the period when new economy stocks were gaining significance in the global economy and were having profound impact on the very nature of the stock market and its workings. To trace trends in new economy stock price movement, thirty-seven new economy stocks have been selected for each country. Stocks have been selected from BSE TMT index (for India) and from NASDAQ 100 (for USA) on basis of availability of data for the entire study period. Price data (on monthly and yearly basis) and financial data (on yearly basis) have been compiled from official website of Bombay Stock Exchange, New York Stock Exchange and from official website of these new economy firms.

The structure of the paper is the following. Section1 inquires whether new economy sector has come to constitute a significant sector in the stock markets of the two nations. Section 2 explores the factors determining the new economy stock prices in the two stock markets. This is analyzed in three ways. First, using a time series analysis, second, a cross section analysis and, third, a panel data estimation technique. We summarize the results and make a comparative analysis of the trends in new economy stock price movements in the two economies. We conclude in favor of a presence of bubble. Section 3 attempts to explore the factors leading to the formation of such bubble.

## 2. NEW ECONOMY SECTOR IN THE STOCK MARKET

To emphasize importance of new economy sector in the stock market in recent years we could inquire relative importance of different important sectors in influencing activities or movement in stock market. To be precise, we investigate whether and to what extent market returns are influenced by sectoral returns. The return of the sector that explains significantly variations in market return might be identified as a significant sector.

For India, BSE 200 index is taken as the market proxy. The BSE 200 Index (1989-90=100) serves the purpose of quantifying the price movements and reflects the sensitivity of the market in an effective manner. BSE Information Technology Sector index (BSE IT), BSE Fast Moving Consumer Goods Sector index (BSE FMCG), BSE Capital Goods Sector Index (BSE CG), BSE Public Sector Unit Index (BSE PSU) and BSE Healthcare Sector Index (BSE HC) are the important sectoral indices. For USA, Nasdaq 100 is chosen as the market proxy, and NASDAQ Bank Index, NASDAQ Biotechnology Index, NASDAQ Computer Index, NASDAQ Industrial Index, NASDAQ Telecommunications Index and NASDAQ Other Finance Index are chosen to represent different important sectors in US stock market.

Individual sector returns and market returns are computed using monthly stock prices as the change in stock prices. Relative importance of sectors could be checked by regressing market return on sectoral returns. However, if return series contain unit roots the regression analysis will be subject to the spurious regression phenomenon.

Applying Dickey-Fuller (DF) and augmented Dickey-Fuller (ADF) (whenever necessary) tests to the return data using the package Microfit (Version Windows 4.0) reveals all return series (both in India and in USA) to contain unit roots and to be stationary in their first difference (integrated of order one) thus invalidating estimation using Ordinary Least Square (Table 1 and Table 3).

This, however, does not create problem if the series are cointegrated. A cointegrating relationship is seen as a long term or equilibrium phenomenon. Cointegrated variables may deviate from their relationships in the short run, but their association would return in the long run. In this framework, for any sector to be significant in the stock market, individual sectoral returns and market return must be cointegrated.

Testing for cointegrating relationship between market return and individual sector returns has been done using Microfit for Windows (version 4.0) (Table 2 and 4). One sector is chosen at a time and whether the return of the chosen sector is co-integrated with market return is tested using Johansen estimate of the co-integrating vector. Selecting number of cointegrating factor to be two and using estimation option for trended variable, with an assumed trend in the data generating process, we find return of the IT sector to be strongly cointegrated with that of the market return in both the countries. This establishes the emerging new economy sector as an important sector in both the stock markets along with the other established sectors.

Inquiring for the trend in the movements of the new economy stocks in the two markets we find a common trend. Year 1998 was the period when new economy stocks were gaining importance. Stock prices experienced a meteoric rise in 1999 and 2000 followed by a crash. 2001 was a period of downward revision in stock prices that continued in 2002 and 2003. These similarities in price movement invoke further inquiry regarding factors influencing new economy stock prices in the two markets.

## 3. FACTORS DETERMINING NEW ECONOMY STOCK PRICES

This section investigates the factors behind formation of new economy stock prices in the two markets. Ideally, in a stock market, fundamentals, that is financial and economic variables determine stock prices. Hence, deviation between actual stock price and true stock price are random. If however, speculative factors determine stock prices, actual prices are driven away from the true price. This hints formation of 'bubble'.

**Time series analysis:**

In literature different time series models are available. Two such studies are worth mentioning. Dwyer and Hafer (1990) suggest prices to be fundamentally determined if dividend payments can explain the changes in stock prices. Blanchard and Watson (1982) explain the method of detecting the presence of bubble. In any period, actual price deviates from the fundamental price by the bubble. With bubble proportional change in stock prices will be an increasing function of time and predictable. This can be tested by regressing proportional change in stock prices on time. One can construct different models to perform this regression analysis.

Burman (1999) developed a simple model (A) that could be estimated to detect presence of bubble.

$$\ln P_t = a + b.t + c.t^2 + e_t \qquad \text{.............} \quad (1)$$

Where $E(e_t) = 0$ for all t

$$E(e_t e_{t-1}) = 0 \text{ and } E(e_t^2) = \sigma^2 \text{ for all t.}$$

(1) could be useful for our purpose. The model incorporates non-linearity and it is a multiplicative model where coefficients show proportionate changes. Since we have annual financial data, Dwyer and Hafer (1990) method would lead to unsatisfactory estimated results due to low degrees of

freedom. With stock price data on daily, monthly and yearly basis, a model like that of Burman (1999) is useful. In this model if stock prices are fundamental determined, coefficients of t and $t^2$ should not be statistically significant, implying that change in stock price cannot be predicted except for a constant growth. Model (1) is estimated by ordinary least square method using data on new economy firms, selected earlier.

**Results of time series analysis:**

The study finds

- Significant role of bubble in new economy stock price determination, in the two countries
- In both the economies, prices of new economy stocks are significantly influenced by time and variation in stock prices could be explained solely by variation in time
- This is evident from high values of $R^2$ and adjusted $R^2$ and from significant t values for estimated regression coefficient of time and $(\text{time})^2$
- The contribution of bubble however varies across firms. Contribution of bubble is mild ($R^2<0.5$) for only a few firms in both the economies. In most of the cases $R^2$ lies within the high range of 0.8 to 0.96.

The presence of bubble, as detected by the time-series analysis, might induce us to conclude that the new economy stocks have in general been bubble-determined with the stock markets grossly overestimating the stocks. Detailed results are in appendix (Table 5 and 6)

However, there are certain problems. In short run, bubbles are likely to dominate fundamentals. The test however cannot be extended to long run due to insufficiency of relevant data. Moreover, the study uses Burman's (1999) model where proportional changes in stock prices depend on only two factors, t and $t^2$. Estimated results depend crucially on the specification of the model. Thus it would be better to detect the role of fundamental variables in determining stock prices. Scope of any detailed time-series analysis is however limited owing to non-availability of sufficient data. Alternatively, we might resort to cross section analysis. This is dealt with in the following subsection.

**Cross Section Analysis**

Cross section analysis inquires whether at every year of the study period price formation is based on fundamental economic and financial variables. Of the different fundamental variables the study selects four. These are (i) dividend per share (DPS) (ii) net worth per share (NWS) (iii) net profit per share (NPS) and (iv) debt-equity ratio (D/E). Proportional change in stock prices is regressed on these four fundamental variables namely DPS, NPS, NWS and D/E using a simple regression equation like (2). For fundamental determined stock prices, coefficients of DPS, NWS, NPS and D/E ratio should be statistically significant.

$$\ln P_i = \text{Constant} + a.(DPS)_i + b.(NWS)_i + c.(NPS)_i + d.(D/E)_i + u_i \quad \text{.............} \quad (2)$$

Where $E(e_i) = 0$ for all i

$E(e_i e_j) = 0$ for i not equal to j and $E(e_i^2) = \sigma^2$ for all i.

There is no problem of multi collinearity in the data. (2) has been estimated using data on selected new economy stocks separately for the two countries for all the six years at four different points namely at opening price, at closing price, at high price and at low price. If at any stage of regression, t ratio for estimated regression coefficient for any of the fundamental variables has been found less than unity in absolute term, regression has been rerun with the particular variable dropped. This is to improve the adjusted $R^2$ of the model. The final estimated equation incorporates only those fundamental variables whose estimated regression coefficients possess t ratios that exceed unity in absolute term. Adjusted $R^2$ in the final regression equation shows the maximum extent to which fundamental variables could explain variations in new economy stock prices. The results obtained for successive years are then compared to trace out the trend in price formation over the period of study.

## Results of cross section analysis

The cross section analysis finds that in both the stock markets

- Values of $R^2$ and adjusted $R^2$ remained low during 1998
- It dwindled to a minimum during 1999 and in the first half of 2000.
- Explanatory power started improving since late 2001 and reached a moderate level during 2002-2003.
- Insignificant t values for the estimated regression coefficients of fundamental variables. Detailed results are in appendix (Table 7 to Table 12)

Results of the study highlight that the stock market boom of 1998-2000 was indeed not being driven by fundamentals in both the markets. Hence both the time series and cross section analysis point towards bubble determined new economy stock price in the context of India and USA. There are however, certain limitations of time series and cross section analysis. Resorting to panel data estimation that takes into account both the time and spatial dimension of data set could enrich any empirical analysis.

**Panel data analysis**

With data on variables on N cross sectional units for T periods, the relationship among variables using the pooled data set might be represented as:

$$y(i,t) = a + b.x(i,t) + e(i,t) \qquad .............. \quad (3)$$

y(i,t) denotes the dependent variable, i denote cross section identifier and t the time identifier. x(i,t) is the vector of explanatory variables for the *i*th firm in the *t*th time period. x's are non-stochastic and e(i,t) follows the classical assumptions.

Data on stock price and financial variables for selected new economy firms (Indian and US) for the six-year period 1998-2003, have been used to construct balanced panels of 222 observations for each country. The panel is estimated for each country separately at four price points, namely at open price, high price, low price and close price with NPS, DPS, NWS and DE as explanatory variables, using the econometric package LIMDEP. In order to decide which model suits the data best, five models are defined.

1. y(i,t) = a + e(i,t) (no group effects or xs)C
2. y(i,t) = a(i) + e(i,t) (group dummies only)
3. y(i,t) = a + b.x(i,t) + e(i,t) (regressors only, the classical model)
4. The full 'one-way' model
    I. The one way FEM (with xs & group effects) described as: y(i,t) = a(i) + b.x(i,t) + e(i,t), i = 1,2,....N; t = 1,2,...T, e(i,t) is a classical disturbance with E[e(i,t)] = 0 and Var. [e(i,t)] = $\sigma^2(e)$

    II. The Random effect model described as:
    $y(i,t) = a_i + b.x(i,t) + e(i,t); a_i = a + u_i \quad i = 1,2,...N$
    or, $y(i,t) = a + b.x(i,t) + u_i + e(i,t)$
    or, $y(i,t) = a + b.\ x(i,t) + W_{i,t}$
    $a_i$ is assumed to be a random variable with mean 'a'. $u_i$ is a random error term with usual assumptions. This cross-sectional specific error term is uncorrelated with the errors of the variables. The random effects model is a generalized regression model with the assumptions
    $E[u_i] = 0$, $Var.[u_i] = \sigma^2(u)$, $Cov[e_{it}, u_i] = 0$,
    $Var.[e_{it} + u_i] = \sigma^2 = \sigma^2(e) + \sigma^2(u)$,
    $Corr[e_{it} + u_i, e_{it} + u_i] = r = \sigma^2(u)/\sigma^2$
5. The full 'two-way' model
    I. The two way FEM (with x's, group effects & time effects) described as:
    $y(i,t) = a_0 + a(i) + g(t) + b.\ x(i,t) + e(i,t)$, i = 1,2,....N; t = 1,2,...T, e(i,t) is a classical disturbance with E[e(i,t)] = 0 and

Var. $[e(i,t)] = \sigma^2(e)$. The problem of multi collinearity is avoided by imposing the restriction

$$\sum_{i-1,N} a(i) = \sum_{t=1,T} g(t) = 0$$

II. The two-way random effect model or Error Components Models with group and time effect described as:
$y(i,t) = a + b.\ x(i,t) + u_i + v\ (i,t)$
$v(i,t) = e(i,t) + u(i) + w(t)$
with the usual assumptions
$u(i) \sim N[0, \sigma^2(u)]$, $e(i,t) \sim N[0, \sigma^2(e)]$, $w(t) \sim N[0, \sigma^2(w)]$.
The individual error terms are not correlated with each other and are not auto correlated across both cross section and time series units. The cross-section specific error affects only the observations in that panel. The time-specific error component is peculiar to all observations for that time period t. The third $e_{it}$ affects only the particular observation.

Chi-squared statistics based on the likelihood functions and F statistics based on the sums of squares are used to choose among models (1) to (5). Breusch and Pagan's Lagrange multiplier statistic is used for testing FEM/REM against CLRM. Hausman's chi-squared statistic is used for testing the REM against FEM.

**Panel Data Findings:**

Detailed results are shown in Table 13 to Table 21. The basic characteristics of the two financial markets selected in this study differ substantially. The Indian stock market lags substantially in terms of efficiency, growth and depth as compared to the US stock market even in the era of financial liberalization. In both the markets, however, new economy firms do possess some 'individuality' that is each firm has a special characteristic of its own. This is evident from the Lagrange Multiplier Test by which FEM/REM is favoured over classical linear regression model at all price points. The nature of 'individuality' however differs in the two markets. In Indian context, the two way model with explanatory variables as well as group effect and time effect (model 5) is superior to other models at all price points. This is suggested by likelihood ratio test and F test. Further, the Hausman statistic suggests superiority of FEM over REM at all the four price points. The presence of significant 'group effect' and 'time effect' confirms that firms are distinct in the sense that factors influencing price formation mechanism of one firm seems to be unique for that firm and the factors change significantly over time. In US stock market, the situation is different. Although FEM/REM is favoured over classical linear regression model at all price points, REM is superior to FEM. Firms do have 'individuality' but the differences are random. They are, as if, random drawing from a much larger population. There seems to exist, some general rule or general set of factors that influence price formation mechanism of the sector. Within the sector, price formation mechanism of one firm differs from that of others, but the difference is purely random. This difference in stock price behaviour might reflect the differences in depth and nature of the two markets. In a developed stock market, investors are supposed to be better informed due to availability of better signal sent by the market. In a not so developed market, it might be difficult for the investors to frame any general rule regarding price formation mechanism of firms.

Thus, whatever be the degree and extent of development, efficiency and depth of the stock market, new economy stock prices have never been fundamental determined. The presence of non-economic factors in price formation mechanism is asserted by the insignificant role of fundamental variables in stock price determination in both the markets. It is speculation and herd behavior which could explain new economy stock price movement over the period of study. Nature and extent of speculation however might differ across the markets. Now it remains to be seen what possibly led to the formation of bubble in case of the new economy stock prices? Does the formation of bubble have to do with a change in the very mechanism through which the stock market behavior is understood to be operating?

## 4. BUBBLES IN NEW ECONOMY STOCK PRICES: A POSSIBLE EXPLANATION

A typical bubble begins with a 'precipitating factor' such as development of something that seems unique to the investors. Then follows an 'amplification mechanism', generally in the form of assertions from media, reinforcing the view (Farlow, 2002). The resulting stock price increase generates optimism pushing up prices further.

The global new economy stock price boom during 1998-2000 was driven mostly by the enthusiasm for the new economy created by the assertions of the emerging 'new economy paradigm'. The paradigm claims the new technology and globalization to have ushered in a new economic era of faster, stable and inflation free growth and hence stronger profit. The old pattern of boom and slump is claimed to disappear leading to a transformation of the markets. Most of the future growth potential was expected to be in the new economy reducing economic significance of the other sectors. Ultimately, as claimed by the paradigm, the new economy will penetrate other sectors of the economy.

The optimism fed by the assertions of new economy paradigm possibly changed the nature and composition of investment in stock market. The resulting perceived growth opportunity of new economy stocks allowed them to sell at high prices. The initial increase generated expectations of further increase and attracted new buyers – normally speculators or momentum investors. Replacement of value investment by momentum investment hastened speculating activities pushing up prices much above the earning capacity.

The fact that the bubble was almost entirely in the new economy stocks in both the countries under consideration confirms the presence of momentum investment in the new economy sector. The stock price behaviour during 1999-2000 was different from the bubble preceding the 1929 crash, or the "Nifty Fifty" bubble of the 1970s. In both the cases, almost all the stocks were over-valued.

Traditional asset price theory suggests that the presence of even a few 'rational' agents betting against the bubble might stop it in its track (Farlow, 2002). However, this corrective mechanism did not trigger in case of new economy stocks. The 'rational' value investors found it difficult to regain dominance over the momentum investors. The reason perhaps was the strong line of defense of the new economy paradigm. The assertions were manifold, such as:

- New technology is expected to bring about significant improvement in the real economy and the resultant productivity increase could justify the valuations of new economy stocks. A bubble, if present in the market, will never burst.
- New economy stocks are 'growth' stocks that cannot be evaluated by standard tests.
- For long duration assets such as equity, it is inappropriate to judge bubble on basis of immediate price action because PDV of a stock depends crucially on long term cash flows. New economy stock prices might rise sufficiently in future to justify the high prices in late 1999 or in early 2000 (Siegel, 2000).

The increased optimism and inflow of momentum investment pushed up prices to levels that even the most zealous supporter of new economy paradigm found hard to rationalize. The bubble burst when the optimism of the short-term, momentum investors was reversed.

## 5. CONCLUSION

The study thus concludes that the traditional models of asset price determination based on rationality assumption thus cannot explain movement in the new economy stock prices. The study further predicts that even if growth stocks dominate in the new era, bubble might still develop. Any over-estimation of the growth opportunity might again invite momentum investment inviting another stock market slide. Moreover, this razor edge stability in the stock market in the new economy could have significant psychological impact on the real economy producing profound disequilibrium. The formation of bubble in one part of the economy distorts the flow of funds through out the economy making the flow of funds biased to that sector. The bursting of bubble could produce growing pessimism in the economy constraining real economy activities and the severity of the disequilibrium would hinge upon the strength of nexus between financial sector and the real sector. However, this issue is not addressed in our study. Our study has pointed to a new era of functional instability, or rather razor-edge stability, embedded in the stock market. New models need to be developed in order to explain the causes of functional instability and to gauge the impact of this instability on underlying real economy.

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### Website

http:\\www.bseindia.com

http:\\www.indiainfoline.com

http:\\www.capitalmarket.com

http:\\www.nasdaq.com

http:\\www.bubbles.com

## APPENDIX

### Table 1
### Unit Root Test (Case for India)

| Variables | 56 obs<br>Test Statistic* | | First difference (55 obs)<br>Test Statistic** | |
|---|---|---|---|---|
| Return BSE 200 index | ADF(12) | -1.58 | DF | -10.46 |
| Return BSE IT index | ADF(9) | -2.38 | ADF(12) | -3.61 |
| Return BSE PSU index | ADF(12) | -2.25 | ADF(9) | -3.65 |
| Return BSE CG index | ADF(12) | -2.22 | DF | -10.07 |
| Return BSE HC index | ADF(12) | -0.96 | DF | -20.69 |
| Return BSE FMCG index | ADF(10) | -1.87 | DF | -10.82 |

*95% Critical Value for the Dickey-Fuller Statistic = -3.5162
**95% Critical Value for the Dickey-Fuller Statistic = -3.5189

### Table 2
### Johansen Tests for Co-integration (Case for India)

(With unrestricted intercept and unrestricted trend in the VAR)
(54 observations: 1999M5 to 2003M10)

| List of variables included in the cointegrating vector | Trace | | Maximum eigenvalue | |
|---|---|---|---|---|
| | r = 0 | r <=1 | r = 0 | r <=1 |
| Return BSE 200, Return BSE IT | 35.17* | 15.72* | 19.45* | 15.72* |
| Return BSE 200, Return BSE PSU | 36.91* | 18.11* | 18.81* | 18.11* |
| Return BSE 200, Return BSE CG | 44.02* | 17.03* | 26.99* | 17.03* |
| Return BSE 200, Return BSE FMCG | 60.86* | 18.83* | 42.02* | 18.83* |
| Return BSE 200, BSE Return HC | 48.84* | 19.96* | 28.88* | 19.96* |

The columns labeled r = 0 test a null hypothesis of no cointegration, while the r <= 1 columns test a null of at most one cointegrating vector.

* denotes rejection of the null at 5% level of significance.

Table 3

**Unit Root Test (Case for USA)**

| Variables | (71 obs) Test Statistic | | First difference (70 obs) Test Statistic | |
|---|---|---|---|---|
| Return Nasdaq 100 Index | ADF(10) | -1.72 | DF | -12.66 |
| Return Nasdaq Bank Index | ADF(6) | -2.52 | DF | -12.63 |
| Return Nasdaq Biotech Index | ADF(11) | -1.69 | ADF(1) | -7.58 |
| Return Nasdaq Computer Index | ADF(10) | -1.74 | ADF(10) | -1.74 |
| Return Nasdaq Financial Index | ADF(6) | -2.73 | ADF(4) | -3.56 |
| Return Nasdaq Industrial Index | ADF(12) | -3.13 | DF | -16.57 |
| Return Nasdaq Telecom Index | ADF(10) | -1.54 | DF | -15.53 |

95% Critical Value for the Dickey-Fuller Statistic = -3.4889

Table 4

**Johansen Tests for Co-integration (Case for USA)**

With unrestricted intercept and unrestricted trend in the VAR (69 observations:1998M4 to 2003M12)

| List of variables included in the cointegrating vector | Trace | | Maximum eigenvalue | |
|---|---|---|---|---|
| | r = 0 | r <=1 | r = 0 | r <=1 |
| Return Nasdaq 100, Return Bank | 54.61* | 18.79* | 35.80* | 18.79* |
| Return Nasdaq 100, Return Biotech | 70.76* | 22.89* | 47.86* | 22.89* |
| Return Nasdaq 100, Return Computer | 79.28* | 27.62* | 51.66* | 27.62* |
| Return Nasdaq 100, Return Financial | 49.20* | 12.11* | 37.09* | 12.11* |
| Return Nasdaq 100, Return Industrial | 91.26* | 25.35* | 65.91* | 25.35* |
| Return Nasdaq 100, Return Telecom | 57.47* | 26.85* | 30.63* | 26.85* |

The columns labeled r = 0 test a null hypothesis of no cointegration, while the r <= 1 columns test a null of at most one cointegrating vector.

* denotes rejection of the null at 5% level of significance.

## Table 5
## Results of Time series Analysis (Case for India)

| Company | t values | | | R² | Company | t values | | | R² |
|---|---|---|---|---|---|---|---|---|---|
| | Const. | Time | Time² | | | Const. | Time | Time² | |
| Aptech | 63.6 | -4.03 | -6.95 | 0.60 | MTNL | 90.7 | -3.52 | -2.70 | 0.39 |
| Aftek | 44.8 | 5.06 | -9.94 | 0.73 | NIIT | 139.4 | -1.88 | -11.72 | 0.77 |
| BSEL | 48.9 | -11.66 | -9.8 | 0.87 | Penta G | 60.6 | -15.4 | -6.60 | 0.91 |
| CMC | 59.6 | -2.94 | 2.24 | 0.49 | Penta Soft | 60.6 | -15.4 | -6.60 | 0.91 |
| Compucom | 46.9 | -11.21 | 0.96* | 0.88 | Polaris | 51.2 | -5.87 | -1.89* | 0.63 |
| Crest com | 44.8 | 5.06 | -9.94 | 0.73 | Psi Data | 70.2 | 2.52 | -10.71 | 0.76 |
| Cybertech | 34.3 | -18.06 | 2.79 | 0.94 | Ramco | 59.1 | -9.06 | 2.00* | 0.87 |
| DSQ | 44.4 | -6.83 | -7.42 | 0.76 | Ram Info | 48.6 | -0.8* | -13.13 | 0.79 |
| Digital Glob | 67.5 | 3.49 | -6.67 | 0.65 | Rolta | 63.1 | 9.27 | -10.82 | 0.83 |
| Finolex | 74.9 | 2.85 | -4.64 | 0.49 | Satyam | 64.7 | 0.31* | -10.43 | 0.72 |
| Geom Soft | 48.6 | -11.13 | 4.58 | 0.88 | Silverline | 37.3 | -8.67 | -4.15 | 0.83 |
| Him F Com | 40.6 | -9.25 | -5.80 | 0.83 | Sonata | 37.3 | -8.90 | -7.91 | 0.83 |
| Hugh soft | 60.7 | -11.61 | -3.54 | 0.88 | Tata Info | 104.1 | -2.52 | -5.44 | 0.59 |
| Hugh Tele | 57.3 | -3.11 | -0.23* | 0.37 | Tata Elxsi | 80.5 | 7.71 | -8.90 | 0.77 |
| ITI | 22.7 | -5.00 | -2.04* | 0.66 | Trigyn Tech | 42.7 | -3.07 | -4.71 | 0.42 |
| Infosys | 140.2 | 10.13 | -7.90 | 0.80 | Usha Beltron | 15.8 | -7.40 | 2.90 | 0.88 |
| Mastek | 50.0 | 1.60* | -10.09 | 0.71 | VSNL | 73.6 | -3.38 | -5.72 | 0.51 |
| Moser Baer | 45.9 | 0.69* | -1.92* | 0.11 | Wipro | 62.3 | -3.53 | -2.32 | 0.39 |
| | | | | | ZEE | 66.3 | -3.27 | -11.87 | 0.78 |

## Table 6
## Results of Time series Analysis (Case for USA)

| Company | t values | | | R² | Company | t values | | | R² |
|---|---|---|---|---|---|---|---|---|---|
| | Const. | Time | Time² | | | Const. | Time | Time² | |
| Adobe | 8.24 | 4.90 | -3.15 | 0.60 | Interactive | 46.55 | 1.68* | -3.67 | 0.62 |
| Amazon | 9.00 | 12.6 | -11.5 | 0.79 | Level 3 C | 4.73 | 16.24 | -14.45 | 0.87 |
| Amgen | 72.5 | 5.00 | -12.3 | 0.96 | Linear | 42.85 | 4.38 | -8.198 | 0.86 |
| Apple | 18.0 | 5.47 | -6.01 | 0.46 | Maxim | 34.40 | 20.90 | -24.6 | 0.33 |
| Applied | 22.5 | 4.87 | -7.36 | 0.76 | Mercury | 17.74 | 4.29 | -6.97 | 0.77 |
| ATY Tech | 14.4 | 2.85 | -2.1 | 0.26 | Microchip | 28.47 | 0.83* | -3.36 | 0.71 |
| BEA | 10.0 | 1.2* | -3.10 | 0.58 | Microsoft | 41.39 | 14.12 | -6.50 | 0.40 |
| Broadcom | 14.0 | 6.80 | -8.39 | 0.69 | Network | 9.20 | 7.10 | -8.63 | 0.69 |
| Check Point | 16.8 | 1.5* | -4.93 | 0.82 | Nextel | 11.44 | 7.74 | -8.41 | 0.62 |
| Cisco | 19.1 | 10.6 | -11.9 | 0.78 | Nov | 27.61 | 1.03* | -3.69 | 0.73 |
| Comcast | 41.3 | 1.42 | -1.2* | 0.08 | Oracle | 15.07 | 3.36 | -6.04 | 0.76 |
| Compuware | 12.4 | 3.58 | -1.7* | 0.59 | People Soft | 30.13 | -6.81 | 6.89 | 0.51 |
| Dell | 28.3 | 8.78 | -9.06 | 0.65 | Qualcom | 17.30 | 3.95 | -7.14 | 0.82 |
| e Bay | 13.7 | 5.47 | -7.75 | 0.74 | Scandisk | 6.90 | 5.03 | -6.45 | 0.60 |
| Echostar | 18.1 | 5.64 | -9.72 | 0.88 | Sebl | 14.10 | 3.58 | -6.04 | 0.73 |
| Electronics | 43.9 | -4.1 | 1.18* | 0.77 | Sun Micro | 14.60 | 9.05 | -11.41 | 0.81 |
| Flex | 27.0 | 4.30 | -8.60 | 0.88 | Veritas | 15.90 | 4.03 | -6.28 | 0.71 |
| Intel | 30.0 | 6.70 | -7.96 | 0.64 | Yahoo | 5.921 | 13.02 | -12.58 | 0.79 |

## Results of Cross section Analysis: India versus USA

'*' denotes significance at 5%level of significance for all tables

Table 7

| 1998 | | t values of estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj $R^2$ | d st |
| Open price | India | Dropped | 1.7 | 1.3 | Dropped | 0.16 | 2.22 |
| | USA | 2.42* | -1.85 | 1.78 | Dropped | 0.21 | 1.8 |
| High Price | India | 1.27 | dropped | 1.59 | Dropped | 0.10 | 2.34 |
| | USA | 1.12 | -1.78 | 1.46 | Dropped | 0.04 | 1.9 |
| Low Price | India | Dropped | 1.57 | 1.42 | Dropped | 0.14 | 2.1 |
| | USA | 3.2* | -1.36 | Dropped | Dropped | 0.22 | 2 |
| Close Price | India | 1.32 | dropped | 1.47 | Dropped | 0.09 | 2.0 |
| | USA | 1.91 | -1.29 | dropped | Dropped | 0.06 | 2.2 |

Table 8

| 1999 | | t values for estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj.$R^2$ | d st |
| Open price | India | Dropped | 1.20 | 1.52 | Dropped | 0.06 | 2.22 |
| | USA | 1.08 | -1.35 | Dropped | 1.12 | 0.02 | 1.8 |
| High Price | India | Dropped | 1.38 | 1.52 | 1.03 | 0.05 | 2.34 |
| | USA | 1.35 | -1.74 | 1.06 | 1.20 | 0.05 | 1.9 |
| Low Price | India | Dropped | 1.17 | 1.61 | Dropped | 0.07 | 2.1 |
| | USA | 1.91 | Dropped | Dropped | 1.00 | 0.08 | 2 |
| Close Price | India | Dropped | 1.17 | 1.81 | 1.23 | 0.07 | 2.0 |
| | USA | 1.19 | -2.12* | 1.26 | 1.02 | 0.08 | 2.2 |

Table 9

| 2000 | | t values for estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj.$R^2$ | d st |
| Open price | India | 1.7 | 1.19 | -1.86 | Dropped | 0.06 | 2 |
| | USA | -1.40 | Dropped | Dropped | Dropped | 0.002 | 2.1 |
| High Price | India | 1.49 | 1.07 | -1.47 | Dropped | 0.008 | 2.36 |
| | USA | -1.00 | Dropped | Dropped | Dropped | -0.01 | 2.4 |
| Low Price | India | 1.65 | 1.58 | -1.3 | Dropped | 0.06 | 2.1 |
| | USA | Dropped | 1.29 | 1.18 | Dropped | 0.03 | 1.9 |
| Close Price | India | 1.58 | 1.61 | -1.19 | Dropped | 0.06 | 2.3 |
| | USA | 0.49 | Dropped | Dropped | Dropped | -0.02 | 1.8 |

Table 10

| 2001 | | t values for estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj.$R^2$ | d st |
| Open price | India | 1.59 | 1.02 | Dropped | Dropped | 0.06 | 2.28 |
| | USA | Dropped | 0.60 | Dropped | Dropped | -0.02 | 2 |
| High Price | India | 2.39* | Dropped | -1.19 | Dropped | 0.10 | 2.12 |
| | USA | Dropped | 0.46 | Dropped | Dropped | -0.02 | 2 |
| Low Price | India | 2.38* | 1.48 | Dropped | -1.78 | 0.22 | 2.19 |
| | USA | 2.83* | 1.14 | 2.07* | Dropped | 0.41 | 1.9 |
| Close Price | India | 3.21* | 1.31 | Dropped | -1.8 | 0.30 | 2.17 |
| | USA | Dropped | 2.31* | Dropped | 3.14* | 0.31 | 1.8 |

Table 11

| 2002 | | t values for estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj.$R^2$ | d st. |
| Open price | India | 4.45* | -3.51* | -4.62* | Dropped | 0.46 | 1.86 |
| | USA | Dropped | Dropped | 1.36 | 2.25* | 0.13 | 1.8 |
| High Price | India | 4.02* | -3.01* | -4.16* | Dropped | 0.39 | 1.78 |
| | USA | Dropped | Dropped | 1.55 | 2.35* | 0.15 | 1.6 |
| Low Price | India | 4.22* | -3.04* | -4.33* | Dropped | 0.38 | 1.88 |
| | USA | Dropped | Dropped | 2.36 | 1.70 | 0.16 | 2.1 |
| Close Price | India | 3.93* | -3.02* | -4.03* | Dropped | 0.33 | 1.89 |
| | USA | Dropped | Dropped | 1.73 | 1.62 | 0.10 | 2 |

Table 12

| 2003 | | t values for estimated regression coefficients | | | | | |
|---|---|---|---|---|---|---|---|
| | | NPS | DPS | NWS | DE | Adj.$R^2$ | d st |
| Open price | India | 3.71* | -1.17 | 2.6* | Dropped | 0.26 | 2.02 |
| | USA | 3.76* | Dropped | Dropped | -1.42 | 0.33 | 2 |
| High Price | India | 3.36* | Dropped | 2.07* | Dropped | 0.25 | 2 |
| | USA | 2.75* | Dropped | Dropped | -1.90 | 0.26 | 1.9 |
| Low Price | India | 3.75* | Dropped | 2.53* | Dropped | 0.28 | 2.11 |
| | USA | 4.01* | Dropped | Dropped | -1.35 | 0.35 | 2.2 |
| Close Price | India | 3.52* | -1.05 | 2.31* | Dropped | 0.26 | 2.07 |
| | USA | 2.42 | Dropped | Dropped | -2.19 | 0.25 | 2.0 |

## Table 13
## Panel Data Estimation Results (Case for India)

Observations: 222 Parameters: 47 Degree of freedom: 175

| Table: D.I.1 | Open price | High price | Low price | Close price |
|---|---|---|---|---|
| R-squared | 0.77 | 0.83 | 0.84 | 0.87 |
| Adjusted $R^2$ | 0.71 | 0.78 | 0.79 | 0.84 |
| Model test: F[46,175](prob) | 12.84(0.00) | 17.96(0.0) | 19.35(0.0) | 26.03(0.00) |
| Log-L | -282.89 | -246.03 | -246.69 | -220.23 |
| Restricted (b=0) Log-L | - 447.35 | -440.24 | -447.81 | -449.47 |
| LogAm PrCrt | 0.141 | -0.191 | -0.185 | -0.424 |
| Akaike Info. Crt. | 2.972 | 2.640 | 2.646 | 2.407 |
| Estd. Autocorrelation of e(i, t) | - 0.036 | 0.115 | 0.178 | 0.039 |

## Table 14
## t ratios for explanatory variables (Case for India)

| Variable | DPS | NWS | NPS | DE | Constant |
|---|---|---|---|---|---|
| Open price | 0.43 | 0.07 | -0.63 | -1.03 | 52.48 |
| High price | -0.13 | 1.61 | -0.43 | -0.42 | 67.36 |
| Low price | -0.21 | 1.7 | -0.49 | -0.49 | 54.28 |
| Close price | -0.45 | 1.5 | -0.27 | -0.56 | 67.55 |

## Table 15
## Test Statistics for the Classical Model (Case for India)

| | Likelihood Ratio Test (Prob. Values) | | | | F Tests (Prob. Values) | | | |
|---|---|---|---|---|---|---|---|---|
| | Open price | High price | Low price | Close price | Open price | High price | Low price | Close price |
| (2) Vs (1) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (3) Vs (1) | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| (4) Vs (1) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (4) Vs (2) | 0.01 | 0.00 | 0.06 | 0.01 | 0.02 | 0.00 | 0.12 | 0.02 |
| (4) Vs (3) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (5) Vs (4) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| (5) Vs (3) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## Table 16
## Test Statistics for the Classical Model (Case for India)

| | LM statistic | Hausman Statistic |
|---|---|---|
| Open price | 185.84 (2 df, prob value = 0.00) | 24.60 (4 df, prob value = 0.00) |
| High price | 240.32 (2 df, prob value = 0.00) | 14.74 (4 df, prob value = 0.00) |
| Low price | 223.02 (2 df, Prob value = 0.00) | 12.75 (4 df, prob value = 0.01) |
| Close price | 278.83 (2 df, prob value = 0.00) | 23.51 (4 df, prob value = 0.00) |

(High values of LM favor FEM/REM over CR model, High values of H favor FEM)

## Table 17
## Estimated Fixed Effects (Case for India)

| | Intercept dummies | | | | Differential dummies (Infosys base) | | | |
|---|---|---|---|---|---|---|---|---|
| | Prices (table shows t ratios) | | | | | | | |
| Group | Open | High | Low | Close | Open | High | Low | Close |
| Ace | -4.63 | -4.24 | -5.16 | -4.6 | 18.43 | 18.01 | 22.30 | 20.38 |
| Aptech | 0.13 | -1.62 | -0.11 | 2.23 | 10.98 | 13.92 | 14.42 | 9.70 |
| Amex | 0.08 | 1.01 | 1.03 | -2.5 | 11.03 | 9.77 | 12.59 | 17.09 |
| Atcom | -1.46 | -1.34 | -3.42 | -2.74 | 13.35 | 13.36 | 19.48 | 17.37 |
| Compucom | -0.78 | -1.47 | -0.51 | -1.34 | 12.39 | 13.68 | 15.01 | 15.28 |
| Crest Comm | -1.07 | -0.55 | -1.22 | -0.62 | 12.89 | 12.26 | 16.17 | 14.19 |
| Data pro | -4.80 | -4.78 | -7.74 | -6.38 | 18.70 | 18.88 | 26.39 | 23.21 |
| data soft | -5.33 | -4.5 | -6.94 | -5.79 | 19.54 | 18.42 | 25.11 | 22.26 |
| Digital Eqp | 2.48 | 2.71 | 3.97 | 3.39 | 7.25 | 7.10 | 7.97 | 7.84 |
| Finolex | 0.80 | 0.32 | 1.56 | 0.66 | 9.74 | 10.70 | 11.55 | 11.94 |
| Frontier | -8.03 | -8.25 | -10.35 | -8.97 | 23.85 | 24.38 | 30.54 | 27.30 |
| Infosys | 7.01 | 7.14 | 8.94 | 8.28 | 0.00 | 0.00 | 0.00 | 0.00 |
| Infotech | 1.51 | 2.39 | 1.97 | 2.23 | 8.80 | 7.62 | 11.14 | 9.68 |

*Table 17 (contd...)*

| | Intercept dummies | | | | Differential dummies (Infosys base) | | | |
|---|---|---|---|---|---|---|---|---|
| | Prices (table shows t ratios) | | | | | | | |
| Group | Open | High | Low | Close | Open | High | Low | Close |
| KLG Sys | -1.43 | -0.61 | -0.92 | -0.31 | 13.43 | 12.33 | 15.67 | 13.66 |
| Maars | -1.34 | -1.41 | -1.14 | -1.08 | 13.29 | 13.59 | 16.01 | 14.89 |
| Mastek | 2.95 | 3.19 | 3.02 | 3.27 | 6.54 | 6.37 | 9.49 | 8.06 |
| Mphasis | 2.11 | 2.11 | 2.90 | 3.24 | 7.50 | 7.70 | 9.23 | 7.66 |
| MTNL | 0.75 | 0.06 | 1.66 | 0.61 | 10.00 | 11.30 | 11.65 | 12.25 |
| NIIT | 3.78 | 3.6 | 4.76 | 4.1 | 5.27 | 5.75 | 6.79 | 6.79 |
| Odyssey | -3.91 | -2.5 | -3.62 | -2.65 | 17.32 | 15.29 | 19.91 | 17.33 |
| Onward | -0.36 | -0.44 | -1.15 | -0.74 | 11.78 | 12.09 | 16.07 | 14.38 |
| Orient | -1.00 | -0.49 | -1.28 | -0.66 | 12.77 | 12.15 | 16.26 | 14.23 |
| Pentamedia | 1.41 | 0.97 | 0.58 | -0.3 | 8.97 | 9.87 | 13.33 | 13.67 |
| PSI Data | 1.88 | 1.5 | 1.50 | 1.35 | 8.19 | 9.00 | 11.84 | 11.04 |
| Ram Info | -2.78 | -3.56 | -4.66 | -3.99 | 15.53 | 16.96 | 21.54 | 19.45 |
| Rolta | -0.45 | 0.23 | 0.08 | 0.23 | 11.87 | 11.01 | 14.10 | 12.81 |
| Satyam | 1.96 | 3.19 | 3.43 | 3.15 | 8.11 | 6.40 | 8.87 | 8.27 |
| SSI | 1.04 | -0.15 | 1.09 | 1.48 | 9.04 | 11.19 | 11.90 | 10.27 |
| Sri Adhikari | 0.50 | -0.64 | 1.23 | -0.21 | 10.40 | 12.39 | 12.31 | 13.53 |
| Tata Elxsi | -0.68 | -0.67 | -0.31 | -0.17 | 12.26 | 12.43 | 14.72 | 13.45 |
| Tata Info | 1.36 | 2.32 | 3.31 | 2.69 | 9.07 | 7.78 | 9.09 | 9.01 |
| Trigyn | 1.66 | 1.26 | 0.42 | 0.25 | 8.58 | 9.43 | 13.60 | 12.81 |
| TVS | -0.02 | -1.06 | -1.59 | -1.09 | 11.08 | 12.92 | 16.59 | 14.76 |
| VSNL | 1.08 | 2.11 | 2.98 | 2.28 | 8.51 | 6.98 | 8.16 | 8.37 |
| Wipro | 5.10 | 4.96 | 7.03 | 5.68 | 3.01 | 3.44 | 2.99 | 4.10 |
| Zee | 2.14 | 1.73 | 2.13 | 1.9 | 7.47 | 8.33 | 10.47 | 9.84 |
| Zenith | -1.56 | -2.32 | -3.40 | -2.84 | 13.59 | 14.98 | 19.52 | 17.60 |

### Table 18
### Estimated Fixed Effects (case for India)

| | Intercept dummies | | | | Differential dummies (1998 base) | | | |
|---|---|---|---|---|---|---|---|---|
| | Prices (table shows t ratios) | | | | | | | |
| Year | Open | High | Low | Close | Open | High | Low | Close |
| 1998 | -3.25 | -1.09 | -1.81 | 0.44 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1999 | 1.54 | 5.35 | 3.36 | 8.78 | -20.37 | -27.28 | -21.92 | -35.30 |
| 2000 | 7.10 | 6.79 | 5.43 | 2.23 | -44.01 | -33.55 | -30.78 | -7.67 |
| 2001 | 0.30 | -2.86 | -2.65 | -5.05 | -15.19 | 7.35 | 3.38 | 23.09 |
| 2002 | -2.22 | -3.21 | -4.06 | -3.62 | -4.05 | 9.25 | 9.89 | 17.39 |
| 2003 | -3.37 | -4.88 | -0.25 | -2.69 | 0.84 | 16.41 | -6.48 | 13.36 |

### Table 19
### Test Statistics for the Classical Model (Case for USA)

| | LM statistic | Hausman Statistic |
|---|---|---|
| Open price | 185.84 (2 df, prob value = 0.00) | 4.60 (4 df, prob value = 0.29) |
| High price | 186.99 (2 df, prob value = 0.00) | 5.12 (4 df, prob value = 0.28) |
| Low price | 175.14 (2 df, prob value = 0.00) | 5.48 (4 df, prob value = 0.24) |
| Close price | 186.87 (2 df, prob value = 0.00) | 0.76 (4 df, prob value = 0.94) |

### Table 20
### b/St.Error for fundamental variables (Case for USA)

| Variable | DPS | NWS | NPS | DE | Constant |
|---|---|---|---|---|---|
| Open price | 0.25 | 0.47 | 0.16 | -1.26 | 52.48 |
| High price | 0.44 | 1.59 | 1.38 | -0.49 | 18.04 |
| Low price | 0.26 | 1.75 | 1.89 | 0.79 | 24.72 |
| Close price | 0.61 | 0.88 | 1.79 | 0.66 | 22.62 |

### Table 21
### GLS Estimates (Case for USA)

| | Open Price | High Price | Low Price | Close Price |
|---|---|---|---|---|
| Var[e] | 0.954350D+00 | 0.601005D+00 | 0.294059D+00 | 0.318146D+00 |
| Var[u] | 0.218723D+01 | 0.665011D-01 | 0.143090D+00 | 0.927872D-01 |
| Var[w] | 0.295443D+01 | 0.148965D+01 | 0.780311D+00 | 0.934508D+00 |
| Sum of Sq | 0.722685D+03 | 0.179577D+03 | 0.111723D+03 | 0.109950D+03 |
| R-squared | 0.569545D-01 | 0.143353D-01 | 0.132259D+00 | 0.461992D-01 |

BCU 4108

# Price and Volume Effects Associated with Changes in Sensex

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## Abstract

The study examines the share price and volume effects of changes in the composition of Sensex both at the time of announcement of a change and at the time of implementation of change for both inclusions to and exclusions from the Sensex during the period 1998 to 2005. Although any clear price reaction on the date of announcement of addition and deletion of stocks is not found, significant abnormal returns are seen on the following day. A significant price effect on the day of implementation of the change indicating temporary price pressure is noticed. On the effective day of change stock prices on average increase for inclusions and decrease in case of exclusions with prices reverting back thus supporting price pressure hypothesis. The study also does not find any concrete evidence for change in liquidity around additions and deletions.

***Key words*** : Share Price; Liquidity Effect; Sensex; Trading Activity.

## 1. INTRODUCTION

Financial research to examine share price and liquidity effect around changes in composition of companies constituting an index has by far focused on S&P 500 index as it is widely tracked by index funds in the US. As far India is concerned, the BSE Sensitive Index is the most widely used index in the country. The Bombay Stock Exchange (BSE) constructed the Sensitive Index or Sensex as it is more popularly called way back in 1986. It is a market

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capitalization-weighted index comprising 30 shares which represent large, well-established and financially sound companies with 1978-79 as the base year and a base value of 100. Initially full market capitalization methodology was used to calculate the Sensex. However, from September 1, 2003, BSE changed the calculation based on the free-float methodology. Major index providers like MSCI, FTSE, S&P and Dow Jones follow this methodology of index construction. Sensex is by far the most popular securities market index in India and is used for gauging the market performance of companies. It is widely used by the industry for the purpose of benchmarking and by the academics in financial research. BSE has an index committee which looks after the work of framing guidelines for the development and maintenance of all BSE indices. The exchange lays down certain quantitative and qualitative criteria for inclusion of a company's share in the Sensex (www. bseindia.com).

This study is motivated by limited evidence in the area of price and volume effects around index reconstitution from an important emerging stock market like India. Since the criteria of stock inclusion and exclusion for S&P 500 index, which is by far the most benchmarked index internationally differs substantially from that of Sensex, it would be interesting to see the share price and volume behaviour around Sensex reconstitution. Since Ist of January 1986 till 6th of June 2005, a total of 42 scrips have been included in and naturally the equal number excluded from the Sensex. The details of the companies included and excluded from the BSE Sensex are given in Appendix A. From 1986 till 1992 only four scrips were replaced and there was only one change in 1992. The year 1996 saw as many as 15 changes clearly reflecting the changing face of the Indian stock markets as public sector banks and oil companies got listed. Four scrips each were changed in 1998 and 2000 with only one change taking effect in 2001. The frequencies of changes increased in 2002 when the BSE felt the need to reconstitute the index three times and in all four scrips were replaced. One change was due to ICICI's conversion into a bank. In 2003 five scrips were replaced and finally two scrips each were replaced in the years 2004 and 2005 respectively. Thus, off late the frequencies of changes has rapidly increased as a result of new growth sectors emerging within the Indian economy and phenomenally increase in market activity.

This study examines the share price and volume effects of changes in the composition of Sensex both at the time of announcement of a change and at the time of implementation of change for both inclusions and exclusions of companies from the Sensex during the period 1998 to 2005. The rest of the paper is structured as follows. Section two reviews the earlier work while Section three describes the data and research methodology. Section four discusses the results of the study and the last section concludes and gives suggestions.

## 2. REVIEW OF EARLIER WORK

The existing literature examining share price behaviour around changes in the constituents of an index has largely focused on S&P 500. The literature postulates at least four hypotheses to explain the price effects of firms around changes in S&P 500. Therefore it is not surprising that the evidence is at best conflicting and does not point out in one direction. Shleifer (1986) supports the imperfect substitutes hypothesis (ISH) also known as the distribution effect hypothesis. Under this hypothesis the securities are not close substitutes for each other and therefore long term demand for stocks is less than perfectly elastic. Shleifer found significant positive abnormal return at the announcement of the inclusion, which lasted for ten days. He argues that the returns are not related to S& P's bond ratings and that inclusion is not a certification of the quality of the stock. Harris and Gruel (1986) on the other hand advocate the price pressure hypothesis (PPH), which requires a price increase followed by a price decline. They argue that the price increase witnessed at the time of addition of new stocks is temporary. They report an immediate price increase of 3% on announcement, which is nearly fully reversed after two weeks. This may be caused by large scale trading by index funds. Since these funds are obligated to track a particular index any additions and deletions would warrant a purchase (sale) by the index to align itself with the index. Jain (1987) finds support for the information content hypothesis (ICH), which requires that the stock price effect is due to information about firms' future prospects. The liquidity hypothesis advanced by Amihud and Mendelson (1986) asserts that share price contains the capitalized value of all expected trading costs. If there is a permanent decline in the bid/ask spread due to addition of a stock to the index, the present value of all expected trading costs for that stock falls and share price rises. Dhillon and Johnson (1991) found prices to increase on the announcement date and concluded that their results were consistent with information hypothesis and inconsistent with price pressure and imperfect-substitutes hypothesis.

Beneish and Gardener (1995) examine the stock market effect of changes in the composition of Dow Jones Industrial Average (DJIA) and contrary to S&P studies report that the price and the trading volume of newly listed DJIA firms are unaffected. They attribute this to a lack of index fund rebalancing and index funds mimic the S&P 500, not the DJIA.

Beneish and Whaley (1996) look at the effects of changes in the in S&P 500 index from January 1986 through June 1994 and found that prices increase abnormally from the close on the announcement day to the close on the effective day. Beneish and Whaley (1997) provide further evidence of excess returns associated with index revisions and attribute the same to the growing US index fund industry. Lynch and Mendenhall (1997) document significantly positive (negative) post announcement abnormal returns that are only partially reversed following additions (deletions). Their results indicate evidence of existence of temporary price pressure and downward sloping long run demand curves for stocks and represent a violation of market efficiency.

In the Indian context we could find only two studies, which look at the dynamics of index reconstitution. Kumar (2005) looks at the changes in the composition of Nifty and Jr. Nifty index for the period 1996-2003. He found no significant price effects on the announcement day for both the indices. However, for Nifty index he reports a 1.47% return on the effective day, which was subsequently reversed by ninth day. He also did not find any evidence of changes in liquidity for inclusions and exclusions for both the indices. Marisetty (2002) found that investors anticipate firms being added to Sensex in advance but fail to anticipate the firms being deleted. He also reports weak evidence for permanent downward shift in demand for firms deleted from Sensex. However, since he assumes the announcement date to be six weeks before the effective date of change, the exact event date which is of critical importance in an event study is not known. Therefore his results cannot be taken as conclusive.

Thus, the existing literature provides ample evidence of abnormal price reaction around index reconstitution. However, whether the price effect is temporary or permanent and the reasons for the same are still being extensively debated with no emergence of any clear view. The present study contributes extensively to the scarce literature on Indian stock markets and thus provides evidence for the first time in respect of share price and liquidity effect around reconstitution of companies in the Sensex. We examine the share price and volume effect of changes in the constituents of Sensex both at the time of announcement of a change and at the time of implementation of change for both additions and deletions of companies. The Study tests the following hypotheses.

H1: There are no significant abnormal returns around announcement of inclusion and exclusion of stocks in the Sensex.

H2: There are no significant abnormal returns around the effective day of inclusion and exclusion of stocks in the Sensex.

H3: Announcement of inclusion and exclusion of stocks in the Sensex does not increase liquidity.

H4: Inclusion and exclusion of stocks in the Sensex do not increase liquidity.

## 3. DATA AND METHODOLOGY

### 3.1. Data

We obtain the names of all the companies included and excluded from the Sensex over the years from the BSE website. Prowess database on stock market research of Center for Monitoring Indian Economy (CMIE) is used to obtain the necessary share price data and the values of BSE Sensex. There have been a total of 42 additions and simultaneously 42 deletions from the Sensex since 1986 till date. Since Prowess database provides share price data only from 1996 onwards, 40 scrips, which were included/ excluded during the period 1986-1996, were dropped from the sample due to non-availability of share price data. Further, share price data for eight companies was not available due to factors like new listings (Maruti, NTPC and TCS); merger (ICICI with ICICI Bank and Reliance Petroleum with Reliance Industries) and discontinuous trading for Larsen & Toubro. Therefore they were excluded from the sample. Thus, our final sample comprises 36 scrips out of which 17 are additions and 19 are deletions. The period of our study is from 1998 till 2005. The respective announcement and effective dates of changes in the Sensex have been taken from the notices section of the official BSE website.

### 3.2. Research Methodology

In order to measure the stock market's response to changes in the Sensex, we use an event study methodology similar to that described by Ball and Brown (1980, 1985). There are two event dates for each sample: the announcement date of addition/ deletion (AD) and the effective date of the addition/ deletion (ED). If an announcement is made on a Saturday (as most of them are), which is not a trading day, then the next trading day i.e. Monday is taken as the event day. Therefore there are two event windows one for the announcement date and the other for the effective date of change. The announcement window starts from 10th day before the announcement and ends on 10th day after the announcement. Similarly, the effective window commences 10 days before the effective date and ends on the 10th day after the effective date. We use the BSE Sensex as the proxy for the market and estimate the market model parameters using a 250-day period from 260 days to 10 days prior to announcement of change.

For each stock i, the abnormal return on event day t ($AR_{it}$) is computed as:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad \text{.............} \quad (1)$$

Where $R_{it}$ being the explained variable, is the rate of return on stock i on event day t, $\alpha_i$ and $\beta_i$ are ordinary least-squares estimates of the intercept and slope, respectively of the market model regression in the estimation period, and $R_{mt}$ being the explanatory variable, is the rate of return on the BSE Sensitivity Index on event day t. The average abnormal return (AAR) on event day t($AAR_t$) is obtained by dividing the aggregate abnormal returns of all securities on day t by the number of securities (N):

$$(AAR_t) = \sum_{i-1}^{N} AR_{it} / N \qquad \text{.............} \quad (2)$$

In order to test for the persistence of the impact of the event during a period, we cumulate the average abnormal returns over intervals of days $t_1$ through $t_2$ ($CAAR_d$) to obtain the cumulative average abnormal returns where,

$$(CAAR_d) = \sum_{t-t_1}^{t_2} AAR_t \qquad \text{.............} \quad (3)$$

The Z- statistic used for testing the significance of the abnormal returns is described by Dodd and Warner (1983). We first compute standard deviation of abnormal returns for the estimation period -260 days to -10 days. Then we estimate standardized abnormal returns (SAR) for each company by dividing abnormal returns of the event period (i.e.-10 to +10) by the standard deviation obtained.

$$SAR_{it} = AR_{it} / S_{it} \qquad \text{.............} \quad (4)$$

The Z- statistic for average abnormal returns on N securities is calculated as:

$$Z = \sum_{i=1}^{N} SAR_{it} / \sqrt{N} \qquad \text{.............} \quad (5)$$

We test the significance of CAAR for N securities over event days $t_1$ through $t_2$, as:

$$Z = \sum_{i=t_{1i}}^{t_{2i}} SAR_{it} / \sqrt{(T * N)} \qquad \text{.............} \quad (6)$$

We examine the effect of changes in Sensex composition on liquidity by using two measures of trading activity (a) trading volume which is the daily number of shares traded and (b) the number of trades. We use a paired t-test to see whether there is a significant difference between the liquidity of stocks (both traded volume and number of trades) before the announcement and after the announcement and similarly, we test if there is a difference in liquidity before and after the effective date.

## 4. ANALYSIS OF RESULTS

We discuss the results into two parts. Section 6.1 presents the results pertaining to effect on share price and liquidity of inclusion of companies in Sensex around the announcement of the change and the effective date of implementation of the change. Similar analysis is done in Section 6.2 for exclusion of companies from the Sensex.

### 4.1. Stocks Included in Sensex

#### *4.1.1. Effect on Share Price*

Tables 1 and 2 give the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) in respect of announcement and effective date of addition of stocks to the Sensex respectively. We find a positive CAAR of 2.25% during the period starting from 10 days before the announcement and ending on the announcement day. We observe a positive average abnormal return of 1.29% on the announcement day but it is not significant. 59% of companies have a positive abnormal return on this day. On the day after the announcement there is significant positive return of 1.15% with a Z-statistic of 1.80 and 65% of companies witnessing a positive abnormal return. Though our results find insignificant abnormal return on the announcement day, we find a significant abnormal return on the day following the announcement. Lynch and Mendenhall (1997) found a significant abnormal return of 3.15% for S&P 500. However, Kumar (2005) found a statistically insignificant abnormal return of 0.45% on the announcement day for Nifty fifty index for the Indian stock market.

The abnormal return generated around the announcement day is not sustained for long as on the third day a significantly negative AAR of –2.32% is generated (Z-statistic= –2.15) with a CAAR of –2.22% during the period. On the tenth day again a significant negative abnormal return of 1.82 % is seen.

CAARs around the announcement day for stocks included in the Sensex are graphically presented in Figure 1. It is clearly evident that that CAARs rise around the day of announcement and then taper off during the next couple of days after the announcement. These results support the price pressure effect as there is a price reversal after three days.

Generally there is a gap of a maximum of six weeks between the announcement of a change and the effective date of change. We find that on the effective date of additions, a significant and positive AAR of 1.52% is earned (Z-statistic = 2.66). This AAR is virtually similar to that reported for NSE Nifty index by Kumar (2005). We observe CAAR of 2.01% during ten days before the announcement to the announcement day. The price effect is further strengthened when we look at the abnormal returns of individual companies. We find that 82% of companies report positive abnormal return on the effective day of change. There is a significantly negative AAR of -2.84%, five days before the effective day with only 12% of companies having a positive abnormal return. The three day CAAR, centered on the effective day (–1 to +1) is 2.03% with a significant Z-statistic of 2.09 reflects the positive price effect of the market. CAARS for the event window are plotted in Figure 2. Price recovery just before the effective date and an immediate price reversal is clearly evident in the graph.

Thus, in view of our hypotheses, we are unable to reject H1, that there are no abnormal returns around the date of announcement. However based on the statistical evidence we are able to reject H2 as the stocks included in the Sensex show abnormal returns around the effective date of change.

### *4.1.2 Effect on Liquidity*

Table 5 and Table 7 show the effect of announcement of inclusion of stocks in the Sensex on the traded volume and the number of trades respectively. Seven out of the sample of seventeen firms (41%) exhibit an increase in the traded volume over the ten-day period following the announcement as compared to the ten-day period preceding announcement. For the number of trades eight out of the seventeen firms (47%) witness an increase.

Changes in traded volume and number of trades around the effective date of inclusion are also shown in Tables 5 and 7 respectively. 53% and 47% of the firms show an increase in traded volume and number of trades respectively, after the effective date of inclusion of stocks.

The results of the paired t-test do not find any significant difference in trading volume before and after announcement as well as before and after the effective date with t-values of -0.1 and 0.18 respectively. This implies that the trading volume has not increased after the announcement and the effective date. The paired t-test for the number of trades also does not find any significant change both after the announcement and the effective date as t-value of 0.72 and 0.27 respectively are insignificant. Thus, in terms of our hypotheses, we are unable to reject H3 and H4 which stipulate that there is no increase in the liquidity of stocks following announcement of inclusion and actual inclusion of stocks in the Sensex respectively.

Thus, the price effect that we saw earlier cannot be due to liquidity as we do not find any significant change in liquidity around additions. Our findings are similar to Kumar (2005) who does not find any abnormal trading volume for Nifty fifty and Jr. Nifty indices.

## 4.2 Stocks Excluded from Sensex

### *4.2.1 Effect on Share Price*

Tables 3 and 4 give the AARs and CAARs for the announcement and effective date windows respectively. In case of stocks excluded from the Sensex, though we find a fall in price as we see a negative abnormal return of -0.16 % on the announcement day, it is insignificant (Z-statistic= -0.16). 42% companies show an abnormal return less than zero. However, we do find a mild negative AAR of -1.24% (Z-statistic = -1.79, significant at the 10% level) on the following day with 74% firms showing negative excess return. On the fifth day there is a price reversal with a significant positive excess return of 1.86%.

Thus, as documented in earlier studies, we also find a short run price decline albeit small followed by price reversal. Three days CAAR (-1 to +1) is also insignificant. CAARs for the event period surrounding announcement of exclusions are plotted in Figure 3. The graph clearly demonstrates price pressure around the date of announcement and a subsequent price reversal.

As expected, the excluded firms experience a significant negative return of -2.66% on the effective day (Z-statistic= – 4.03). Our evidence is similar to Kumar (2005) who reports an AAR of –1.60%. Three days CAAR (–1 to +1) is -3.03% with significant Z-statistic of –2.39. CAARs for the event period surrounding effective day of exclusions are plotted in Figure 4. The CAAR pattern in this graph closely follows the pattern of the CAARs for the outgoing stocks around the announcement date. Here also price pressure around the effective date and the succeeding price reversal is clearly evident. This shift in demand may come from speculators. Though the index fund managers are expected to buy the scrips added to Sensex and sell the shares excluded, in order to minimize their tracking error but the size of their funds that track Sensex is very small, not exceeding Rs 100 crores.

Stock prices on average increase on the effective day for inclusions and decrease for exclusions. The prices revert back within a week's time for both additions as well as exclusions. This suggests the existence of temporary price effect thus supporting the price pressure hypothesis. Again based on statistical evidence, we are unable to reject H1, our first hypothesis as there is no clear price fall at the time of announcement of the exclusion of stocks from the Sensex. However, the statistical evidence shows a clear price fall at the effective date of exclusion of scrips from the Sensex making us reject H2, our second hypothesis.

### *4.2.2 Effect on Liquidity*

Our analysis of the volume data for the announcement day window for firms deleted from the Sensex (Table 6) reveals that 74% of the firms witness a decline in the traded volume. In case of number of trades 63% of the firms witness a fall after the date of announcement (Table 8). The paired t-test shows a significant fall in trading volume with t-value of –2.63 and an insignificant fall in number of trades with t-value of –1.5 respectively.

When we look at the effective date window of exclusion of stocks we find that 63% of the firms witness a decline in both the traded volume and in the number of trades (Table 6 and Table 8). However, the paired t-test does not find any significant difference in trading volume and number of trades (t-values of 1.38 and 1.42 respectively).

In terms of our hypotheses the above results warrant us to reject H3 as there is a significant fall in the liquidity of shares after the announcement of exclusion. However the test statistics do not provide sufficient evidence to reject H4 as the fall in liquidity after the effective date is statistically insignificant.

Thus, there is no conclusive evidence for decline in trading volumes and number of trades caused by deletion of stocks from the Sensex. Our results are similar to those of Kumar (2005) who finds no evidence of abnormal volume change around effective date of change for Nifty fifty and Jr. Nifty.

## 5. CONCLUSION

This study has examined the share price and volume effects of changes in composition of Sensex at the time of announcement of change and at the effective date of change for both inclusions and exclusions during the period 1998 to 2005. We had hypothesized that changes in the constitution of the Sensex do not have any impact on the share prices and on the trading volume of the shares included and excluded from Sensex. However, the study does not find any clear stock price reaction for inclusion of stocks in the Sensex on the announcement day. There is a significant price effect on the effective day of inclusion of stocks indicating temporary price pressure around the effective day. We find insignificant price effect in case of exclusions of scrips on the announcement of change though there is a mild price effect on the next day. Stock prices on average increase on the effective day for inclusions and decrease in case of exclusions with prices reverting back within a week's time thus supporting price pressure hypothesis. However, this cannot be attributed to index fund rebalancing as corpus of index funds tracking Sensex is very small. The price effect that we see cannot also be caused by liquidity as we do not see any significant change at the time of additions. We also do not find evidence for decline in liquidity caused by deletion of stocks from the Sensex. We suggest that in order to curb speculation, the Bombay Stock Exchange should shorten the gap between the announcement and the effective date in line with S&P 500 which is by far the most tracked index. An area of future research could be to study the long term impact of index reconstitution on stock prices.

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## APPENDIX

Table 1

**Daily Abnormal Return around Announcement Date for Stocks Included in Sensex**

| Event Day | AAR (%) | Z-statistic | CAAR (%) | %AR>0 |
|---|---|---|---|---|
| –10 | –0.41 | –0.67 | –0.41 | 41 |
| –9 | 0.74 | 1.28 | 0.33 | 59 |
| –8 | –0.29 | –0.84 | 0.45 | 53 |
| –7 | 0.22 | –0.57 | –0.07 | 41 |
| –6 | –0.22 | –0.32 | 0.00 | 29 |
| –5 | –0.60 | –1.37 | –0.82 | 41 |
| –4 | 0.29 | 0.40 | –0.31 | 59 |
| –3 | –0.53 | 0.24 | –0.24 | 53 |
| -2 | 0.25 | 0.52 | –0.28 | 47 |
| -1 | 0.96 | 1.14 | 1.21 | 53 |
| AD | 1.29 | 1.43 | 2.25 | 59 |
| 1 | 1.15 | 1.80** | 2.44 | 65 |
| 2 | 0.10 | 0.64 | 1.26 | 53 |
| 3 | –2.32 | –2.78* | –2.22 | 29 |
| 4 | –0.55 | 0.12 | –2.88 | 35 |
| 5 | 0.34 | 0.73 | –0.22 | 65 |
| 6 | –0.39 | -0.82 | –0.05 | 35 |
| 7 | 0.39 | 0.72 | 0.00 | 47 |
| 8 | 1.05 | 1.22 | 1.44 | 59 |
| 9 | –0.04 | 0.36 | 1.00 | 53 |
| 10 | –1.82 | -2.15* | –1.86 | 24 |
| | | | | |
| **Days** | **CAAR** | **Z -statistic** | | |
| (-1to+1) | 3.40 | 2.52* | | |
| (-2 to 2) | 3.76 | 2.47* | | |
| (1 to 10) | -2.1 | -0.05 | | |

* Significant at the 5% level; ** Significant at the 10% level

Table 2

### Daily Abnormal Return around Effective Date for Stocks Included in Sensex

| Event Day | AAR (%) | Z-statistic | CAAR (%) | %AR>0 |
|---|---|---|---|---|
| -10 | 0.38 | -0.14 | 0.38 | 53 |
| -9 | 0.56 | 1.63 | 0.93 | 71 |
| -8 | -0.65 | -0.85 | -0.09 | 41 |
| -7 | 0.89 | 1.02 | 0.25 | 53 |
| -6 | 0.02 | -0.01 | 0.92 | 47 |
| -5 | -2.84 | -4.04** | -2.82 | 12 |
| -4 | 0.34 | 1.12 | -2.50 | 59 |
| -3 | -1.19 | -0.70 | -0.84 | 53 |
| -2 | -0.56 | -0.48 | -1.75 | 47 |
| -1 | 0.48 | 1.08 | -0.08 | 59 |
| ED | 1.52 | 2.66** | 2.01 | 82 |
| 1 | 0.02 | -0.11 | 1.55 | 53 |
| 2 | 0.09 | -0.03 | 0.11 | 47 |
| 3 | -0.82 | -0.89 | -0.73 | 47 |
| 4 | 0.47 | 0.67 | -0.35 | 65 |
| 5 | -0.25 | 0.38 | 0.22 | 47 |
| 6 | -0.73 | -0.84 | -0.98 | 47 |
| 7 | -0.64 | 0.12 | -1.37 | 47 |
| 8 | 0.00 | 0.45 | -0.64 | 53 |
| 9 | -0.40 | -0.63 | -0.41 | 41 |
| 10 | 0.22 | 0.52 | -0.18 | 41 |
| | | | | |
| **Days** | **CAAR** | **Z-statistic** | | |
| (-1to+1) | 2.03 | 2.09* | | |
| (-4 to 0) | 0.60 | 1.64 | | |
| (1 to 10) | -2.05 | -0.12 | | |

* Significant at the 5 % level; ** Significant at the 1 % level

Table 3

**Daily Abnormal Return around Announcement for Stocks Excluded from Sensex**

| Event Day | AAR (%) | Z-statistic | CAAR (%) | %AR<0 |
|---|---|---|---|---|
| -10 | 0.77 | 0.87 | 0.87 | 47 |
| -9 | 0.25 | 0.35 | 1.02 | 53 |
| -8 | 0.34 | 0.04 | 0.59 | 47 |
| -7 | 0.10 | -0.18 | 0.44 | 68 |
| -6 | 0.59 | 0.45 | 0.69 | 58 |
| -5 | 0.06 | -0.19 | 0.65 | 63 |
| -4 | -0.03 | 0.62 | 0.02 | 42 |
| -3 | 0.23 | 0.59 | 0.20 | 53 |
| -2 | 1.26 | 1.18 | 1.50 | 53 |
| -1 | -0.28 | -0.70 | 0.99 | 74 |
| AD | -0.16 | -0.16 | -0.44 | 42 |
| 1 | -1.24 | -1.79 | -1.40 | 74 |
| 2 | -0.82 | -1.29 | -2.07 | 53 |
| 3 | -0.12 | -0.06 | -0.94 | 53 |
| 4 | -0.54 | -0.49 | -0.66 | 58 |
| 5 | 1.86 | 4.01** | 1.32 | 47 |
| 6 | 0.84 | 0.44 | 2.70 | 53 |
| 7 | -1.39 | -2.27* | -0.54 | 68 |
| 8 | 0.47 | 0.84 | -0.91 | 47 |
| 9 | -0.28 | 0.12 | 0.20 | 63 |
| 10 | 1.63 | 1.42 | 1.35 | 37 |
| | | | | |
| **Days** | **CAAR** | **Z-statistic** | | |
| (-1to +1) | -1.68 | -1.53 | | |
| (-4 to 0) | 1.03 | 0.68 | | |
| (0 to 9) | -1.37 | -0.2 | | |

* Significant at the 5 % level; ** Significant at the 1 % level

Table 4

**Daily Abnormal Return around Effective Date of Stocks Excluded from Sensex**

| Event Day | AAR (%) | Z-statistic | CAAR (%) | %AR<0 |
|---|---|---|---|---|
| -10 | -0.36 | -0.61 | -0.36 | 58 |
| -9 | -0.32 | -0.60 | -0.68 | 68 |
| -8 | 0.88 | 0.75 | 0.56 | 47 |
| -7 | 0.84 | 1.71 | 1.72 | 58 |
| -6 | 0.47 | 0.47 | 1.31 | 42 |
| -5 | 0.27 | 0.13 | 0.73 | 47 |
| -4 | 0.78 | 1.16 | 1.05 | 47 |
| -3 | 0.30 | 0.42 | 1.08 | 32 |
| -2 | 0.49 | 0.69 | 0.79 | 42 |
| -1 | -0.63 | -0.76 | -0.14 | 58 |
| ED | -2.66 | -4.03** | -3.29 | 47 |
| 1 | 0.27 | 0.64 | -2.39 | 68 |
| 2 | 1.48 | 2.38* | 1.75 | 42 |
| 3 | 0.51 | 0.87 | 1.99 | 53 |
| 4 | -0.13 | -0.62 | 0.38 | 58 |
| 5 | -0.04 | -0.66 | -0.16 | 47 |
| 6 | 0.33 | 0.25 | 0.29 | 53 |
| 7 | 0.16 | 0.86 | 0.49 | 58 |
| 8 | 1.31 | 1.28 | 1.47 | 37 |
| 9 | -0.93 | -1.37 | 0.38 | 63 |
| 10 | 0.17 | 0.29 | -0.76 | 68 |
| | | | | |
| **Days** | **CAAR** | **Z-statistic** | | |
| (-1to +1) | -3.03 | -2.39* | | |
| (-4 to 0) | -1.73 | -1.12 | | |
| (0 to 9) | 0.3 | 0.12 | | |

* Significant at the 5 % level; ** Significant at the 1 % level

Figure 1
**CAARs of Stocks Included in the Sensex around Announcement Day**

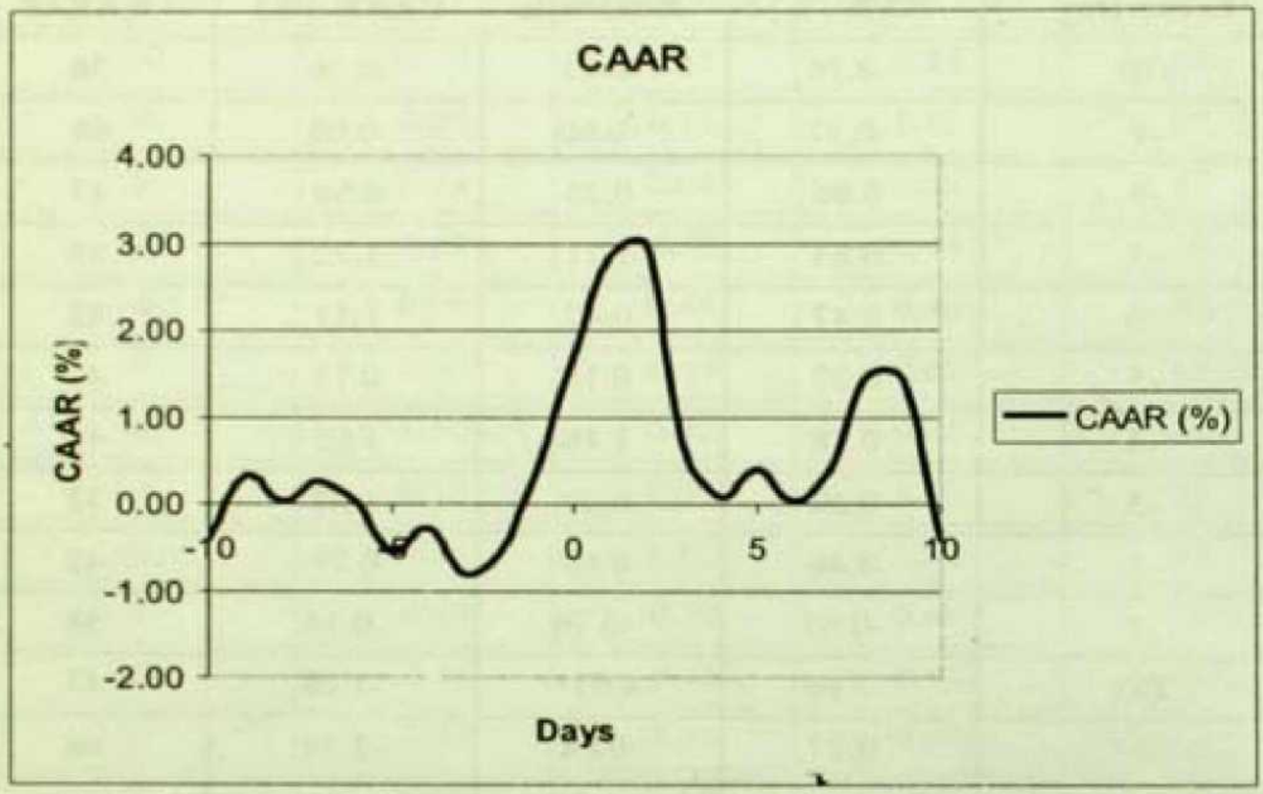


Figure 2
**CAARs of Stocks included in the Sensex around Effective Day**

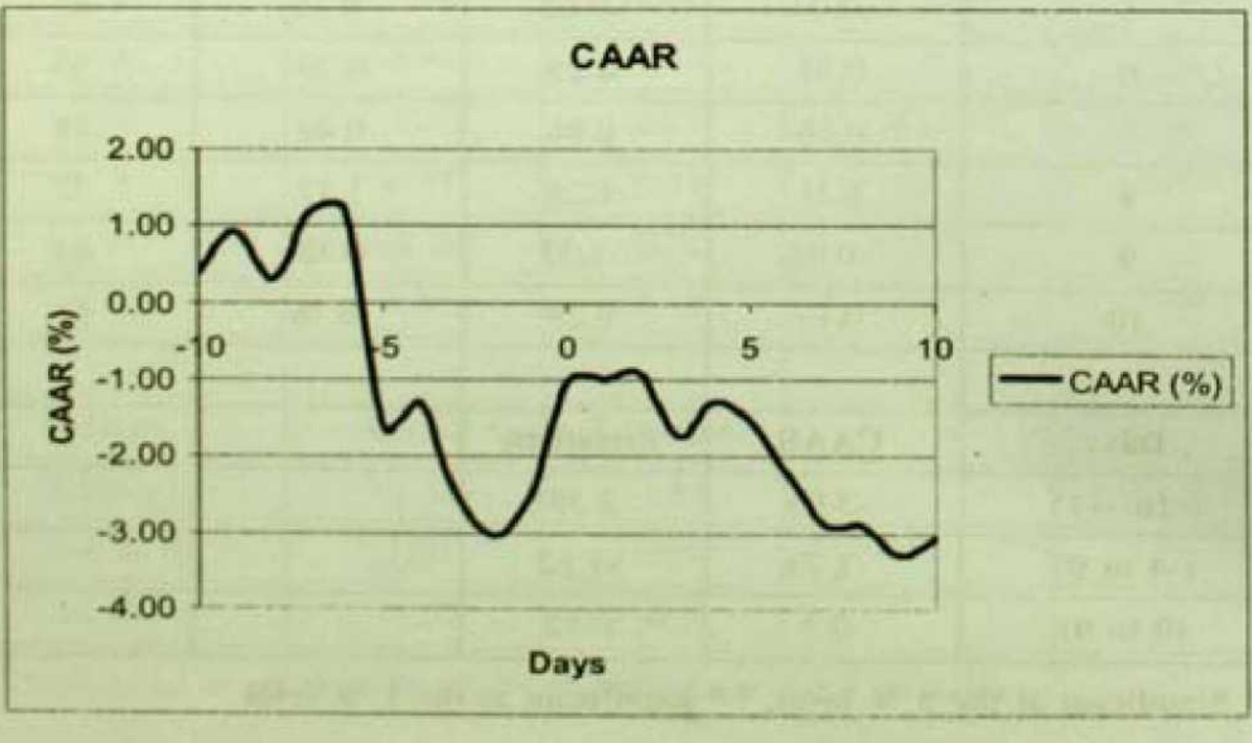


Figure 3

**CAARs of Stocks Excluded from Sensex around Announcement Day**

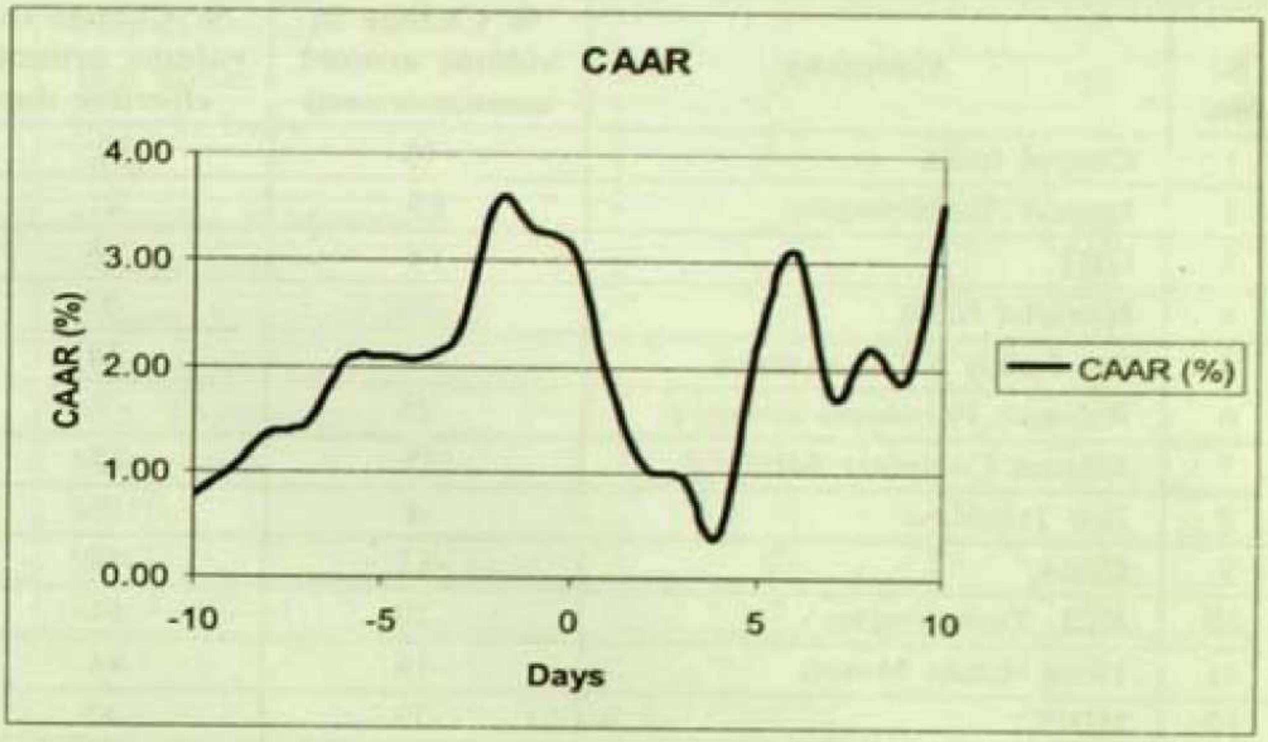
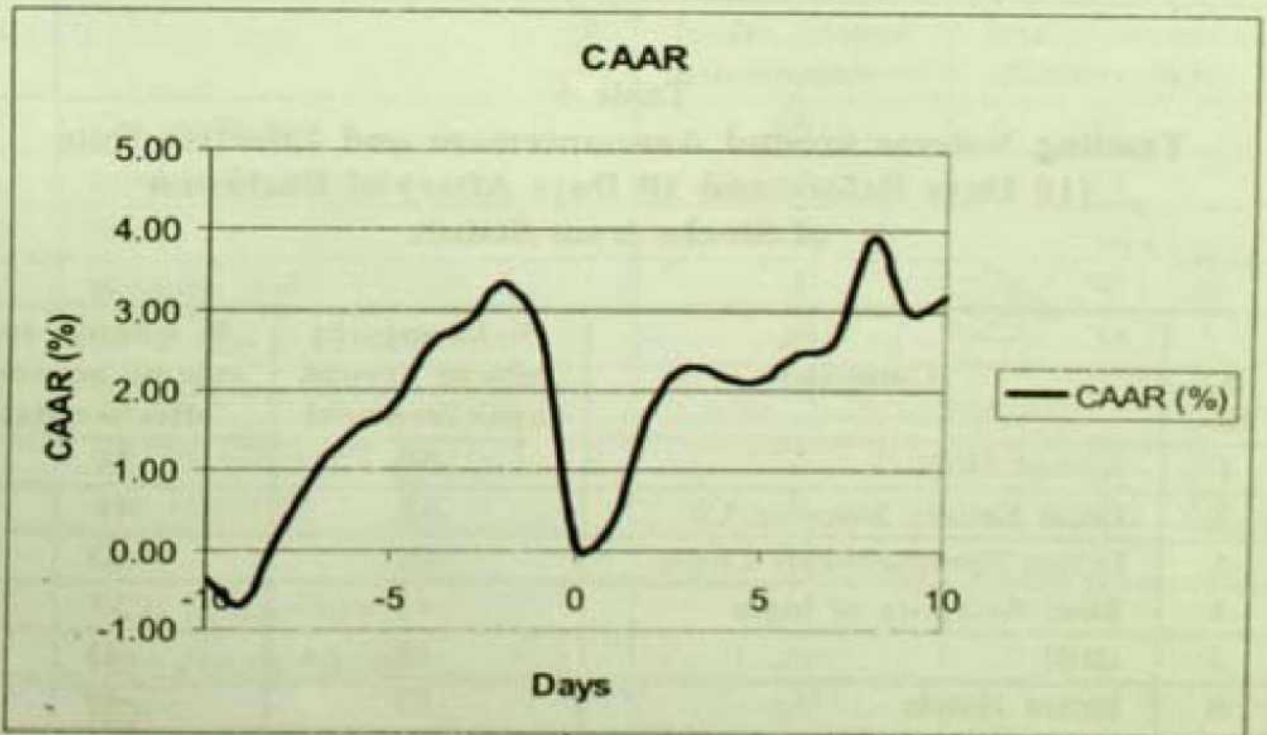


Figure 4

**CAARs of Stocks Excluded form the Sensex around Effective Day**



### Table 5

### Trading Volume around Announcement and Effective Date (10 days before and 10 days after) of Inclusion of Stocks in Sensex

| S. No. | Company | % Change in volume around announcement | % Change in volume around effective date |
|---|---|---|---|
| 1 | Castrol India | -11 | 30 |
| 2 | Infosys Technologies | 85 | 2 |
| 3 | NIIT | 18 | -16 |
| 4 | Novartis India | -39 | 3 |
| 5 | Dr. Reddy'S Laboratories | -43 | -44 |
| 6 | Reliance Petroleum (merged) | -25 | -7 |
| 7 | Satyam Computer Services | 15 | 25 |
| 8 | Zee Telefilms | -4 | 7 |
| 9 | Cipla | -11 | -10 |
| 10 | HCL Technologies | -10 | 34 |
| 11 | Hero Honda Motors | -16 | 44 |
| 12 | HDFC | -39 | -55 |
| 13 | Bharti Tele-Ventures | 77 | -32 |
| 14 | HDFC Bank | 200 | -33 |
| 15 | ONGC | -25 | -44 |
| 16 | Tata Power | 44 | 8 |
| 17 | Wipro | 1 | 8 |

### Table 6

### Trading Volume around Announcement and Effective Date (10 Days Before and 10 Days After) of Exclusion of Stocks from Sensex

| S. No. | Company | % Change in volume around announcement | % Change in volume around effective date |
|---|---|---|---|
| 1 | Arvind Mills | -59 | 26 |
| 2 | Great Eastern Shipping Co. | -13 | 41 |
| 3 | Indian Petrochemicals Corpn. | -66 | -33 |
| 4 | Steel Authority of India | -42 | 33 |
| 5 | IDBI | -18 | -43 |
| 6 | Indian Hotels | -67 | -49 |

*Table 6 contd.*

| S. No. | Company | % Change in volume around announcement | % Change in volume around effective date |
|---|---|---|---|
| 7 | Tata Chemicals | -5 | -36 |
| 8 | Tata Power | -67 | -33 |
| 9 | Novartis India | -62 | -10 |
| 10 | NIIT | -13 | 87 |
| 11 | Mahindra & Mahindra | -41 | 555 |
| 12 | Castrol India | 184 | -22 |
| 13 | Colgate-Palmolive (India) | 18 | 121 |
| 14 | Glaxosmithkline Pharmaceuticals | 60 | -52 |
| 15 | HCL Technologies | -30 | -12 |
| 16 | Nestle India | 59 | -59 |
| 17 | MTNL | -79 | 11 |
| 18 | HPCL | -31 | -12 |
| 19 | Zee Telefilms | 5 | -23 |

Table 7

**Change in Number of Trades around Announcement and Effective Date (10 Days before and 10 Days after) of Inclusion of Stocks from Sensex**

| S. No. | Company | % Change in number of trades around announcement | % Change in number of trades around effective date |
|---|---|---|---|
| 1 | Castrol India | -5 | 23 |
| 2 | Infosys Technologies | 64 | -2 |
| 3 | NIIT | 16 | -12 |
| 4 | Novartis India | -3 | 4 |
| 5 | Dr. Reddy'S Laboratories | -29 | -34 |
| 6 | Reliance Petroleum (merged) | -11 | -9 |
| 7 | Satyam Computer Services | 41 | 18 |
| 8 | Zee Telefilms | -6 | -8 |
| 9 | Cipla | -13 | -25 |
| 10 | HCL Technologies | 1 | 23 |
| 11 | Hero Honda Motors | -22 | 72 |
| 12 | HDFC | 55 | 81 |

*Table 7 contd.*

| S. No. | Company | % Change in number of trades around announcement | % Change in number of trades around effective date |
|---|---|---|---|
| 13 | Bharti Tele-Ventures | 45 | -44 |
| 14 | HDFC Bank | 250 | -34 |
| 15 | ONGC | -25 | -34 |
| 16 | Tata Power | 37 | 21 |
| 17 | Wipro | -1 | 12 |

Table 8

**Change in Number of Trades around Announcement and Effective Date (10 Days before and 10 Days after) of Exclusion of Stocks from Sensex**

| S. No. | Company | % Change in number of trades around announcement | % Change in number of trades around effective date |
|---|---|---|---|
| 1 | Arvind Mills | -51 | 12 |
| 2 | Great Eastern Shipping Co. | 30 | 82 |
| 3 | Indian Petrochemicals Corpn. | -62 | -17 |
| 4 | Steel Authority of India | -60 | 47 |
| 5 | IDBI | 5 | -26 |
| 6 | Indian Hotels | -49 | -11 |
| 7 | Tata Chemicals | -1 | -34 |
| 8 | Tata Power | -54 | -32 |
| 9 | Novartis India | -59 | -13 |
| 10 | NIIT | -15 | 62 |
| 11 | Mahindra & Mahindra | -27 | 328 |
| 12 | Castrol India | 99 | -11 |
| 13 | Colgate-Palmolive (India) | 19 | 94 |
| 14 | Glaxosmithkline Pharmaceuticals | 36 | -43 |
| 15 | HCL Technologies | -27 | -8 |
| 16 | Nestle India | 34 | -30 |
| 17 | MTNL | -67 | 23 |
| 18 | Hindustan Petroleum Corpn. | -13 | -17 |
| 19 | Zee Telefilms | 68 | -32 |

## Appendix A

## List of Companies Included / Excluded from Sensex

### with their Announcement and Effective Dates

| Announcement Date | Effective Date | Outgoing scrips | Replaced By |
|---|---|---|---|
| N.A | 1/1/1986 | Bombay Burmah | Voltas |
| | | Asian Cables | Pieco |
| | | Crompton Greaves | Premier Auto |
| | | Scindia | GE Shipping |
| N.A | 3/8/1992 | Zenith | Bharat Forge |
| N.A | 19/8/1996 | Ballarpur Industries | Arvind Mills |
| | | Bharat Forge | Bajaj Auto |
| | | Bomaby Dyeing | BHEL |
| | | Ceat Tyres | BSES |
| | | Century Textiles | Colgate |
| | | GSFC | Gujarat Ambuja Cement |
| | | Hindustan Motors | HPCL |
| | | IndianOrganic | ICICI |
| | | Indian Rayon | IDBI |
| | | Kirloskar Cummins | IPCL |
| | | Mukand Iron | MTNL |
| | | Philips | Ranbaxy Lab. |
| | | Premier Auto | State Bank of India |
| | | Siemens | Steel Authority of India |
| | | Voltas | Tata Chemicals |
| 3/10/1998 | 16/11/1998 | Arvind Mills | Castrol |
| | | GE Shipping | Infosys Technologies |
| | | IPCL | NIIT |
| | | Steel Authority of India | Novartis |
| 11/3/2000 | 10/4/2000 | IDBI | Dr. Reddy's Lab |
| | | Indian Hotels | Reliance Petroleum |
| | | Tata Chemical | Satyam Computers |

*Appendix A contd.*

| Announcement Date | Effective Date | Outgoing scrips | Replaced By |
|---|---|---|---|
| N.A | 1/1/1986 | Bombay Burmah | Voltas |
| | | Tata Power | Zee Telefilms |
| 24/11/2000 | 8/1/2001 | Novartis | Cipla |
| 23/11/2001 | 7/1/2002 | NIIT | HCL Technologies |
| | | Mahindra & Mahindra | Hero Honda Motors |
| | 31/5/2002 | ICICI | ICICI Bank |
| 26/8/2002 | 10/10/2002 | Reliance Petroleum | HDFC |
| 27/9/2003 | 10/11/2003 | Castrol India | Bharati Tele-Ventures |
| | | Colgate Palomive (India) | HDFC Bank |
| | | Glaxo Smithkline Pharma. | ONGC |
| | | HCL Technologies | Tata Power Company |
| | | Nestle (India) | Wipro |
| | 19/5/2004 | Larsen & Toubro | Maruti Udyog |
| 14/8/2004 | 27/9/2004 | Mahanagar Telephone | Larsen & Toubro |
| 23/4/2005 | 6/6/2005 | Hindustan Petroleum | National Thermal Power |
| | | Zee Telefilms | Tata Consultancy |

*Source:* www.bseindia.com

# A Holistic Approach to Conceptualize Intellectual Capital

**Hardeep Chahal***

**R. D. Sharma***

## Abstract

Invigorating research on the conceptualization, measurement and recording of intellectual capital is being conducted globally but no consensus has reached yet and diverse viewpoints regarding its concept, measurement and recording persist. The objectives of the paper include conceptualization of intellectual capital framework from comprehensive and relationship aspect, various reporting issues and suggestions for the creation of organization culture for the development of intellectual capital. The paper extends the scope of intellectual capital assets from knowledge organizations to services to manufacturing organizations. The future research to be pursued with respect to development of standardized conceptual framework, measurement methods and reporting are also discussed.

*Key words* : Intellectual Capital; Human Capital; Organisational Capital; Innovation Capital; Measurement; Reporting.

## 1. INTRODUCTION

The role of intellectual capital in sustaining competitive advantage and economic value amidst increased competition, swift technological changes, increased customer expectations and their unpredictable behaviour is well known. Though intellectual capital is as old as companies have had customers but it has started receiving significant attention from last decade only. The major contributions to the concept came from researchers like Sveiby, Stelwart, Skandia, Sullivan and Edvinsson (Sullivan, 2000). Till today it has been an issue of great concern and interest for the companies and their managers, analysts and accounting professionals and that too more particularly because of fast developing IT and knowledge sector (Seetharaman et al. 2004). As such invigorating researches on its conceptualization (Nerdrum & Erikson 2001, Sullivan 1999 and Mouritsen & Larsen 2005), measurement ( Sveiby, 1998; Edvinsson & Malone, 1997 and Kaplan& Norton, 1992) and reporting (Meritum 2002) are being conducted globally but yet no consensus has reached ( Seetharaman et al. 2004; and Fincham & Roselender, 2003). The studies reviewed depict scarcity of literature on holistical and organizational perspective of intellectual capital (Table1). The literature authenticates that there exists positive relationship between high quality in human resources management and higher market value; training & investment and profitability; research & development and shareholder value, and investment on work health programme and profitability (Guthrie et al. 2001). All this subsequently contributes to value creating activities of the company by improving the basis for growth, flexibility, innovation and customized products/services. (Pablos 2002). In the light of the ambivalent nature of intellectual capital and its monotonic positive impact on business performance, the paper tries to conceptualize intellectual capital from more comprehensive relationship perspective with due focus on customers and business relationship aspects. In addition, the prevailing issues, prerequisites for the development of intangible assets and future research are also discussed.

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## 2. CONCEPTUAL FRAMEWORK

Intellectual capital has drawn increasing attention globally with its claim to be effective competitive tool for sustaining competitive advantage through value creations. It paves way to uncover hidden resources (intangible assets) - critical for firm's viability and success (Fincham & Roselender 2003 and Bontis & Nikitopoulous 2001). The invigorating research on intellectual capital Tranges from its conceptualization to various measurement and management tools and to creating standards for management & reporting (Petty & Guthrie 2000). The literature depicts a paradigm shift to rely more on intellectual assets than on tangible assets (Zhou & Fink 2003) because of their increasingly importance over tangibles. It has been estimated that intangible assets in general constitute 60-75 percent of corporate value (Berg 2002). But at the same time it comprises highly complex and dynamic set of implicit activities embracing language, experience, history & culture, process, interactions, data, knowledge, information etc., which are very difficult to measure. Moreover, the existing performance measurement tools are also found to be incapable of dealing with emergent complexities of visualizing, creating and leveraging intellectual capital (O'Donnell et al.

2000). The literature scanned reveals that till today the intellectual capital has not yet been adequately defined (Guthrie et al. 2001) and no universal definition could be emerged out even after continuous research on it (Seetharaman et al. 2004). This is the reason that the development of intellectual capital in the organization is conceptualized from different perspectives. Though human capital, structure capital and customer capital are considered to be the major components by all contemporaries but they have been interlinked from different angles from composition/impact point of view. For instance, Edvinsson (1997) has given two-component intellectual capital model comprising structure capital and human capital, human capital further dividing into customer capital and organization capital. Stelwart (1997) considers it to be a three-component model comprising human capital, structure capital and relation capital. Sveiby (1998), one of the major contributors, considered external structure, internal structure and people's competence the main components for analyzing intellectual capital. Similarly, O'Donnell et al. (2000) consider it as comprising of human capital, customer capital and structure capital. Tayles et al. (2002) have given a little bit different intellectual capital model based on intellectual component (comprising organizational / intellectual property and other intellectual component based on human, customer and organizational capital. Among all this, Skandia (2006) concept seems to be more objective and comprehensive. It considers intellectual capital to be the function of structure capital & human capital and considers innovation capital to be the outgrowth of organization capital, which is one of the part of structure capital and another being organization capital. Zhou & Fink (2003) uses the same process but categorized innovation capital into intangible property and intangible assets. In the present paper effort has been made to evolve more comprehensive and objective conceptual framework. Seeing the interrelationship among the intellectual capital components an intellectual model is proposed here which consists of three levels. The first level consists of core components viz, human capital and organization capital. The offshoots of organization capital are the part of level two. Unlike the previous studies, the organization capital consists of three very significant components, which include customer relationship capital, business relation capital and structural capital with a focus on customers, channel members and organizational operating environment respectively. Till today all the contributors have given equal importance to the two components. To harness full advantage from intellectual capital, relationship with customers and business customers should be analyzed independently. The process capital is considered here to be the part of structural capital. The innovation capital, which comes under third level, is the outcome of both human capital and organizational capital (Figure 1). The various components in the proposed model are discussed as under:

## Level One

### a. Human Capital

Like all contemporaries, this is considered as the core component for the intellectual capital process. It is described as the basic potential of an organization which relates to the know-how, capabilities, skills and expertise of the employees and most effective for sustaining competitive advantage because of its source of innovation and strategic renewal characteristics (Bontis 1998). Its value per se, lies with the employees, which possess transferability characteristics. The factors affecting human capital value include competence, attitude, agility, imagination, integrity (M'Pherson & Pike 2001); know-how, problem solving, decision-making, learning (Edvinsson 1997); employees collective competence, capabilities and brainpower (Seetharaman et al. 2004); genetic inheritance, education, experience, attitudes about life and business. The indicators for measuring human capital may include cost of employee per training expense, revenue generated by employees, market capitalization per knowledge worker, knowledge worker turnover, knowledge and non-knowledge worker ratio, number of years experience etc.

### b. Organizational Capital

The paper further considers organization capital as the overall component contributing to the development structure, customer relationship and business relation capital. This component has been considered either as an offshoot of human capital (Edvinsson 1997) or major component (Lynn 1998) or offshoot of structure capital (Stelwart 1997). Literally, it refers to the organization's ability to convert its resources into competitive products and services by operationalising firm's policy and procedures, customized software applications, research and development programmes, training courses, etc. (Seetharaman et al. 2004). In simple words, it is the sum of all assets that contribute to the creative ability of the organization and as such is a function of structure capital, business relation capital and customer relationship capital. A strong organizational capital structure creates a supporting environment for workers and leads to reduced cost and increased profit and productivity and ultimately contributes to the development of intellectual capital assets. Therefore, the organizational capital is a vital structure for organizations and its excellence depends on customer, relation, structure and process capital (Bozbura 2004 and Bontis 2003). The factors contributing to this include mission, vision, basic values, strategies, working systems etc can be counted among these assets.

## Level Two

### a. Structural Capital

The structural capital is considered to be the explicit component of organization capital. It can be described as an enabling structure that facilitates the organization in harnessing intellectual capital ( Seetharaman et al. 2004) and comprises hard assets such as financial assets, building, machinery, infrastructure of the firm (Bontis 1998) and soft assets such as policy framework, guidelines, rules, regulations etc. In other words, it is the knowledge embedded within the routines of an organization and deals with the mechanisms and structures of the organization that supports employees to contribute effectively for optimum intellectual performance (Bontis 1998). The intellectual capital without structural capital would just simply be human capital (Bontis 1998).The contribution of structure capital in intellectual capital may be judged from analyzing factors such as accomplishment of group and departmental goals and profit earned, effective coordination, SWOT analysis etc.

#### *Process Capital*

The process capital is the sub-component of structure capital and refers to the capital resulted in as a result of the business operational processes such as marketing, production, selling etc. The factors contributing to this include various steps that help in accomplishing the departmental targets with optimum utilization of resources more competitively.

### b. Customer Relationship Capital

Customers being the core element for the success of any organization, as such must be taken as an independent and separate component of intellectual capital. The customer capital is the knowledge embedded in relationships external to the firm and includes present and potential customers. Unlike Seetharaman et al. (2004), the customer capital denotes the strength of organizations relationship with customers only and considers suppliers, industry associations, market channels and society to be the part of relational / channel capital. The customer capital can be judged through customer retention & loyalty, customer acquisition cost, brand equity, reputation, strategic alliances, sale rates to permanent customers, loyalty of customer, customer satisfaction, customer complaint rate, market share (Bozbura 2004). But owing to its external nature, knowledge embedded in customer capital is very difficult to codify (Bontis 1998).

**c. Business Relation Capital**

The strategic relationship with forward and backward channel members is another significant and independent core link factor contributing to the value creation activities of the firm. The relation / channel capital represents the potential an organization has due to ex-firm intangibles which include knowledge embedded in suppliers, distributors, partners, government or related industry associations. As such knowledge of marketing channels forms the main theme of channel capital. The factors measuring relation capital include strength of relationship with channel members reputation, strategic alliances, licensing, agreements, distributions, etc (Bozbura 2004).

## Level Three

**a. Innovation Capital**

Innovation capital is the final outcome of the proposed conceptual framework, based on human and organization capital. It refers to the capability of an organization to improve, generate and develop creative ideas to sustain competitive excellence. Information about innovation capital is related to the development, sharing and application of organizational knowledge (Mouritsen & Larsen 2005) and comprises intangible assets and innovation capital.

*(i) Intellectual / Intangible Assets*

Intellectual assets are the outcome of all previously mentioned intellectual capital components. According to Sullivan (1999) intangible assets are created whenever employees develop any bit of knowledge, know-how, or learning. Once it is developed and written, the knowledge is codified and defined and becomes intangible asset. At this point, the firm can move the intellectual asset, rather than the individual, to wherever it is needed. Examples of intellectual assets include methods related to business management, company strategies, plans, procedures, the culture of the company, memos, sketches, drawings, blueprints, and computer programs etc. (Bozbura 2004).

*(ii) Intellectual Property*

It is the extension of the intangible asset component and any intangible item when legally protected becomes the part of intellectual property. Intellectual property includes patents, copyrights, trademarks, and trade secrets. Per se, all visible assets such as the patents of the firm, copyrights, databases, computer programs etc. (Bozbura 2004).

## 3. MEASUREMENT OF INTELLECTUAL CAPITAL

Intellectual capital management has been found to be important measure to compete and sustain competitive advantage in the present hyper competitive environment and ultimately for the continuous longterm success of the firm. Today debates no longer concentrate on whether or not knowledge assets exist, but on how effectively they can be measured and managed. Thus, the firms that learn to measure, manage and leverage their knowledge assets can outperform their counterparts (Brennan & Cornnell, 2000) whereas firms that fail to do so are going to lose out to competitors. The traditional financial measures are unsuitable in the information economy era, which is driven by intellectual capital for sustaining competitive advantage. The limitations of the existing financial reporting have led to invigorating research on measurement methods, based on financial and non-financial aspects, for valuing intangible assets (Guthrie et al. 2001). These methods include Intangible Asset Monitor (Sveiby 2001); Balanced Scorecard (Kaplan & Norton, 1996 & 1992); Skandia Value Scheme (Edvinsson 1997); Hay Method (Guthrie et al., 2001) and Economic Value Added (Pulic, 2001). With the availability of these methods to measure intellectual capital performance, some firms have started measuring and reporting intellectual capital (Goh 2005). The pioneer and most prominent firm that measured intellectual capital performance was Swedish work Insurance Company, which published its report in 1994 using Skandia Navigator. Other financial based methods for intellectual capital measurement include Six Sigma, Liahona Homes, Tabin's q, and calculated intellectual value and European Foundation for Qualitative Management. Despite development of number of methods an appropriate measure of firms' intellectual capital is still in infancy (Chen et al. 2005) and better holistic and integrated approach to measure and understand the creation and development of the intellectual capital value (Kannan & Aulbur 2004 and Guthrie et al., 2001 and Mouritsen et al. 2001b) is still to be evolved out. The commonly used methods for the measurement of intellectual capital are given as under:

*The Skandia Navigator:* The Navigator measurement tool translates firm's vision and strategic mission into concrete measurement activities and analyzes the contribution of organizational efforts towards goal accomplishment (Sveiby 2001) using financial, customer, process, renewal & development and human perspectives. The financial focus of the measure captures the financial outcome of the company, customer focus concentrates on accomplishing customer needs, process focus demonstrates the contribution of internal quality of the processes to delivering customized products and services, renewal and long-term components relates to the organisation's long-term targets and lastly human focus relates to the knowledge creation within an organization by analyzing employees satisfaction and internal operative environment (Valuebased Management, 2006).

*The Intangible Assets Monitor:* The Intangible Assets Monitor measurement tool measures intangible assets using a set of three components namely internal structure, external structure and competence. The selection of relevant indicators for measuring the three components focuses on growth, innovation/renewal, efficiency/utilization and risk/stability, all of which ultimately relates to the company's strategy (Sveiby, 2001) and linked structural capital, customer capital and human capital respectively.

*Value Chain Added Intellectual Coefficient: The* efficiency of value added through organizational intellectual ability using Value Added Intellectual Coefficient is given by Pulic (2002a & 2002b). The value chain method is the sum of capital employed efficiency human capital efficiency and structural capital efficiency used to analyze the efficiency of physical and financial capital, human capital, and structural capital respectively. Higher value chain added intellectual coefficient suggests better management utilization of companies' value creation potential (Pulic 2002a & 2002b).

*Economic Value Added:* The economic value added is a value measurement method based on difference between a company's net operating income after taxes and its cost of capital of both equity and debt (Chen & Dodd, 2001). The basic goal of it is to measure earnings that are close to cash and compare it with return to a capital base - cash equivalent terms (Harper 1999). The major limitation of the method is that it uses extensive performance adjustments and leading to trade-off between complexity, accuracy and ease and this makes EVA a non-standard method (Kannan and Aulbur 2004). But at the same time it is more objective in comparison to other measures like Intangible Asset Monitor, Skandia construct. More importantly, it is considered as the most successful performance metric used by companies and their consultants (Harper 1999).

*Balanced Scorecard:* The balanced scorecard is a measurement technique developed by Kaplan & Norton (1992), which enables organizations to clarify their vision and strategy and translate them into action using learning & growth, business process and customer. The non-financial measures at the same time should also complement financial indicators (Arveson 1998). Though the method is holistic and gives due importance to both finnacial and non-financial performance measures but at the same time degree of subjectivity in the selection of indicators mars the performance of the tool.

*Price to Book Value Method:* This is the most common method used for the calculation of IC. It basically measures the difference between book value and market value. The book value is based on accountants valuation and market value is based on stock price valuation : The major limitation of the method is the fluctuation in the market value (Starssman 1999).

*Return on Investment:* This method measures the contribution of a process, system or individual or programmes to the overall performance of the company. The ratio between net benefits derived from a process or knowledge system and the total costs expended is used to assess the degree of contribution.

Though all these methods are in use but the presence of subjectiveness inhibit the objective evaluation of the intellectual components. For instance the main limitation of Skandia navigator is that it relies on all subjective indicators and there are no obligatory indicators identified to measure intellectual capital and firms as such are themselves responsible to identify the most appropriate / relevant information for representing the business performance (Edvinsson 1997). The methods like intelligent asset monitor, value chain added intelligent coefficient and balanced scorecard are also not free from degree of subjectivity. The major limitation of this method is its lack of quantitative measure of output for intellectual capital value addition (Kannan & Aulbur 2004). Among all this economic value added method seems to be more objective and considered to be the most successful performance metric used by companies and their consultants (Harper 1999). But the major limitation of this method is that it uses extensive performance adjustments and leading to trade-off between complexity, accuracy and ease and this makes EVA a non-standard method (Kannan and Aulbur 2004). Price to book value is another simple and objective method but fluctuations in the market value skewed this method towards subjectivity (Strassman 1999). Return on investment is also found to be gripped with time-consuming and expensiveness factors which reduces its degree of its applicability.

## 4. INTELLECTUAL CAPITAL REPORTING AND DISCLOSURE ISSUES

Reporting on intellectual capital is seen as an important technique to improve decision-making and earn competitive advantage. The literature authenticates that intellectual capital reports will enable companies to assess their intellectual capital resources effectiveness and utilization, interrelationship between intellectual capital components and their relation with strategy and help to provide insight into the current and future cash flows (Pablos, 2002, Kooistra & Zizlstra 2001, and Mouritsen et al. 2001a).

In today's knowledge based economy, it is becoming a major part of companies' value and the effective intellectual capital management requires company to identify, measure and report intellectual capital internally (Seetharaman et al. 2004). The intellectual capital statements are formulated to comprehend company's efforts towards development & status of organizational resources and to assess companies' competencies in relation to employees, customers, technology, and processes (Pablos 2005 and Mouritsen et al. 2001b). The statements disclose information about the vision of the company, a summary of intangible resources & activities and a system of indicators (Mouritsen et al. 2001a). The first intellectual capital report in the world was prepared by Skandia which addressed the organizational hidden values indicators for the future, a vision of the satisfied customer, the search for the success factors, quality of the system, people and technology, competency, renewal and growth, the path forward and glossary of terms related to intellectual capital (Pablos 2005). The second generation reports came into existence form 1997 onwards. Denmark, India, Spain & Sweden in 1997; Austria in 1999, Germany in 2001 and Italy & UK in 2002. Though there is no doubt that reporting of intellectual capital statements help in presenting the comprehensive picture of contribution of intangible assets but still there are number of issues involved in disclosing this information. These issues relate to intangible assets' recognition, external and internal reporting.

*Recognition Criteria:* The invigorating significance of intellectual capital as a value added resource has opened the debate on its reporting alongside with other assets in the financial statements (Roselander & Fincham 2004). The reporting of intangible assets like goodwill, patents, trademarks etc. in traditional financial statements is not considered as any problem because of the possibility to report their values. But accounting for different intellectual capital components like human capital, customer capital, organizational capital and structural capital, which follows subjective measures, is still a debating issue (Roselander & Fincham 2004). Though Indian Accounting Standard 26 (Intangible Assets), which is mandatory for all companies to disclose information on intangible assets from April 1, 2005, has considered identifiably, non-monetary nature and non-physical substance characteristics for recognizing intangible assets but it is impossible to describe the relationship between human capital component and financial performance. Although IAS 38 on intangible assets, which was approved in 1998, provides for the disclosure of some intellectual capital elements in the annual report but most of the intellectual capital resources remained undisclosed (Kooistra & Zizlstra, 2001).

*External Reporting:* From the inception of the research on intellectual capital as a competitive tool for building and developing value creating activities, researchers argued that the demand for its disclosure in the external report is increasing (Bukh 2003). The literature also authenticates the need of intellectual capital information by investors and analysts with focus on the relevant indicators such as R&D expenses, advertising, patents, customer satisfaction, human resources etc. (Bukh 2003). European Commission and Stock Exchange Commission (US) and Accounting Research Foundation (ICAI) have indicated the need and interest on the measurement and management of intellectual capital (Pablos 2005). On contrary, including intellectual capital report in the annual statements is a paradoxical issue. Firstly, unlike financial accounting framework, which is based on backward looking perspective, intellectual asset measurement framework follows forward looking approach. Secondly, companies are not interested in disclosing intellectual capital information as this may harm their competitive position. Thirdly and on the flip side, disclosing such information will increase risk perception of investors because of non-disclosure of relevant information on intangible assets (Kooistra & Zizlstra 2001).

*Internal Reporting:* Though internal reporting is not framed by reporting guidelines like external reporting but still a lot of complexities are involved in developing standardized framework for valuing intellectual capital resources according to accounting standard. Firstly, unlike physical assets, intellectual assets are neither subject to reduction of value nor diminishing returns but still to be amortized. But as per accounting standards it is mandatory to amortize all assets even when their value is not declining. Secondly, the existing accounting standard recognizes only acquired goodwill and not internally developed goodwill. This poses again question on recognition of intellectual resources even for preparing an internal report. Thirdly, factors like time delay (slow impact of flow of intellectual capital investment on creating intellectual effect); zero-sum (even small investments can have enormous impact and large investments may fail) and measurement (intellectual capital cannot be measured in financial terms but ratios, hours, numbers etc. can be used) (Kooistra & Zizlstra 2001).

## 5. PREREQUISITES FOR SETTING ORGANIZATION CULTURE FOR DEVELOPMENT OF INTELLECTUAL CAPITAL

Though the role of intellectual capital may vary from company to company from creation of patentable innovations to licensing or strategic technologies, or entering into new markets or cross licensing etc. (Sullivan 1999 and Koeing 1997) but in general all organizations are required to follow / adopt certain guidelines to manage their intellectual capital:

a. *Intellectual capital as an implicit component:* The inception of development of intellectual capital culture requires to incorporate intellectual capital as an integrated component in all organizational strategies. As such efforts should be made to develop such an operative environment which motivates employees to contribute to the value creation activities for the development of competitive products and services and to harness maximum competitive advantage. (Kooistra & Zizlstra 2001).

b. *Identification of the intellectual capital indicators:* The next step focuses on recognition of indicators for measuring the effectiveness of intellectual assets. The indicators are to be identified and understood in relation to organizational vision, strategies and other associated assets (Mouritsen, 2003). The proposed model of intellectual capital has also discussed the various indicators associated with human, structure, process, customer, and innovation capital.

c. *Recognizing and managing intellectual capabilities:* This step focuses on recognizing intellectual asset management capabilities which include activities like developing portfolio of non-protected assets, expanding competitive assessment, creating litigation avoidance analytical capability (Sullivan 1999 and Koeing 1997) and like. The value creation capacity of companies which cause change in intellectual capital resources should be regularly reviewed and communicated at all levels.

## 6. FUTURE RESEARCH

The future research is to be carried out in the light of following:

*Conceptualization:* Seeing the ambivalent picture of intellectual capital, there is a dire need to have a clear, concrete and well-defined intellectual capital framework in general and industry-specific and user-specific in particular, for the selection of indicators for different components to have reliable measurement results (Kooistra & Zizlstra 2001). Further limited research on creation and interpretation of the intellectual capital model reflects the need to have more focus on firm's value creation activities (Bukh 2003). In addition the framework mentioned here needs pursuing of further research for theory development.

*Measurement:* Though a number of methods have been recognized but still there is a need to make efforts towards recognizing and using standardized methods for valuing intangibles into a formalized framework. A further look into measurement methods (Seetharaman et al. 2004) and their operationalization is required for the selection of objective methods. Per se, there is a need for more descriptive research work, discussions, workshops etc for finalizing the suitability and applicability of the methods for varied industries.

*Reporting:* Like conceptualization reporting of intellectual capital issue is still not resolved. Thus, another challenge that exists today pertains to establishing a consensus about what to report and how to report the intellectual capital of the company. How knowledge works, uncertainty of the validity of the information, lack of ownership of intellectual resources particularly in the area of human capital, implementation problems etc. (Johanson 2003) are some of the areas where an intensive research is required at the national and global levels.

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## APPENDIX

Figure 1

**Conceptual Framework of Intellectual Capital**

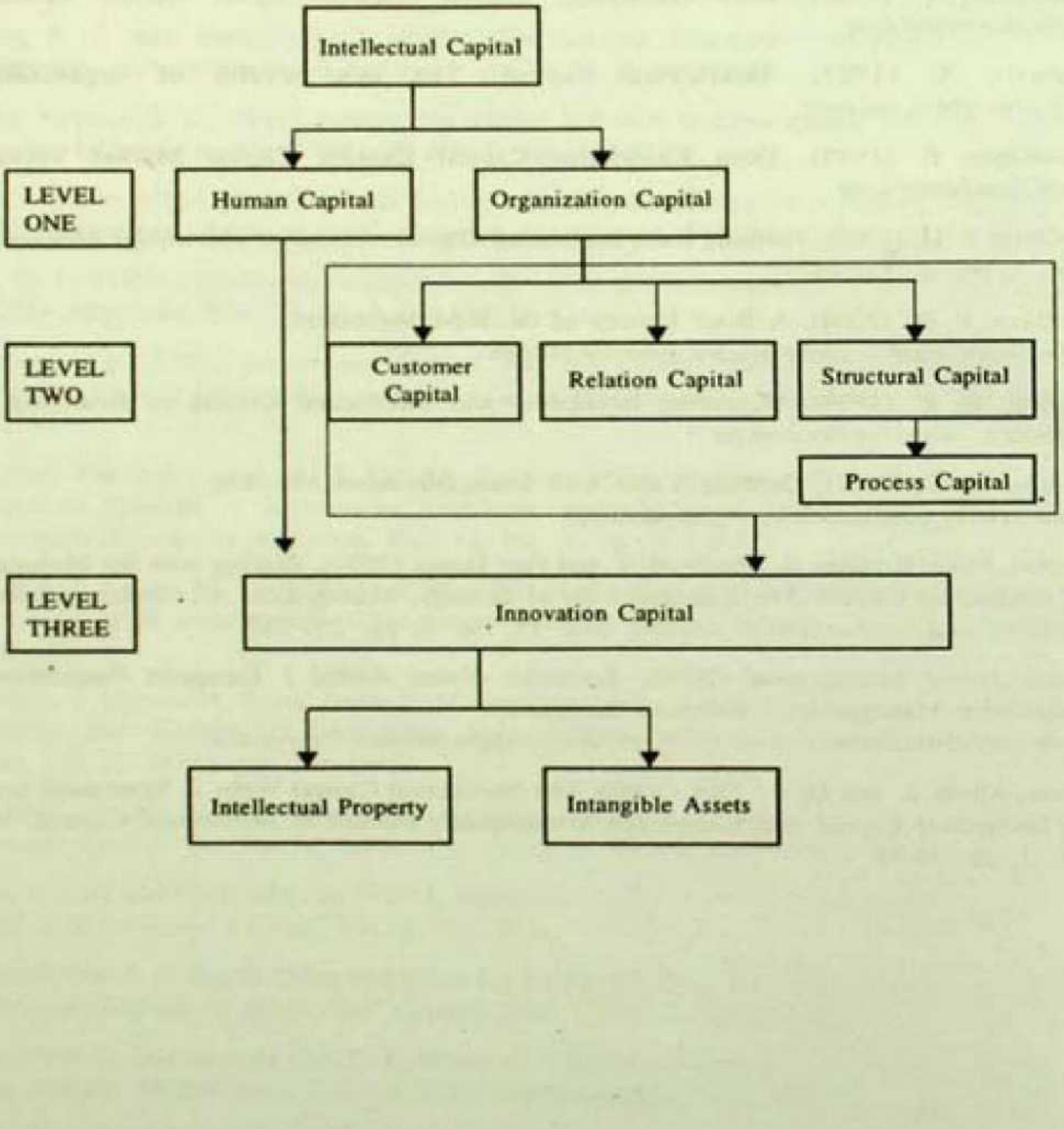

Table 1

**Summary of Reviewed Literature**

| Authors | Year | Study | Nature |
|---|---|---|---|
| Mouritsen and Larsen | 2005 | 2nd Way of KM: The Management Control of Knowledge Resource Through IC Information | Research |
| Chen, Chang & Hwang | 2005 | An Empirical Investigation of the Relationship between Intellectual Capital and Firms' Market Value and Financial Performance | Research |
| Peter Kurz | 2005 | Capital Management and Value Maximiser | Conceptual Value and Management of IC |
| Goh, P C | 2005 | IC Performance of Commercial Banks in Malaysia | Research |
| Pablos, | 2005 | Intellectual Capital Reports in India: Lessons from a Case Study | Research |
| Mouritsen & Larsen | 2005 | The 2nd Wave of Knowledge Management: The Management Control of Knowledge Resources through Intellectual Capital Information | Research |
| Seetharaman, Low and Saravanan | 2004 | Comparative Justification on IC | Research |
| Roslender and Finchem | 2004 | IC Accounting in UK | Literature Renew |
| Roslender and Finchem | 2004 | IC Accounting in UK : A Field Study Perspective | Research |
| Kannan and Aulber | 2004 | IC-Measurement Effectiveness | Methods |
| Bozbura, F Tunc | 2004 | Measurement and Application of Intellectual Capital in Turkey | Research |

*Table 1 (contd...)*

| Authors | Year | Study | Nature |
|---|---|---|---|
| Zhou, Albert Z. and Dieter Fink | 2003 | He Intellectual Capital Web- A Systematic Linking of Intellectual Capital and Knowledge Management | Conceptual |
| Finchem and Roslender | 2003 | IC Accounting as Management Fashion-A Review and Critique | Management / Measurement |
| April. Bosma & Degnol | 2003 | IC Measurement and Reporting: Establishing a Practice in SA Mining | Research |
| Mouritsen, Jan | 2003 | Overview: IC and the Capital Market: The Circulability of IC | Review / conceptual |
| Chaminade and Roberts | 2003 | What it Means is What it Does: A Comparative Analysis of Implementing IC in Norway and Spain | Research |
| Johanson | 2003 | Why are Capital Market Actors Ambivalent to Information about the Certain Indicators of IC? | Conceptual |
| Tayles, Bramley, Adshead and Farr | 2002 | Dealing with the Management of Intellectual Capital: The Potential Role of Strategic Management Accounting | Model |
| Mouritsen, Larsen and Bukh | 2002 | Developing and Managing Knowledge through Intellectual Capital Statements | Conceptual |
| Pablos | 2002 | Evidence of Intellectual Capital Measurement from Asia, Europe and the Middle East | Research |
| Seetharaman, Sooria and Saravanan | 2002 | IC Accounting and Reporting in the Knowledge Economy | Literature Renew |
| Mouritsen | 2002 | IC and Capital Management: The Capability of IC | Conceptual |
| M'Pherson, and Pike, | 2001 | Accounting, Empirical Measurement and Intellectual Capital | Measurement and Models |

*Table 1 (contd...)*

| Authors | Year | Study | Nature |
|---|---|---|---|
| Nerdrum and Erikson | 2001 | IC: A Human Capital Perspective | Conceptual |
| Chen.and Dodd | 2001 | Operating Income, Residual Income and EVA: Which Metric is More Value Relevant | Methods |
| Gultric, Petty and Johanson | 2001 | Sunrise in the Knowledge Economy - Managing, Measuring and Reporting Intellectual Capital | Literature Review |
| Guthrie | 2001 | The Management Measurement and Reporting of IC | Literature Review |
| Roslender & Fincham | 2001 | Thinking Critically about Intellectual Capital Accounting | Model |
| Bontis, Nick and Danny Nikitopoulos | 2001 | Thought Leadership on IC | Significance of IC |
| Mouritsen,Larsen and Bukh | 2001 | Valuing Intellectual Capital in the Future Intellectual Capital supplements at Skandia, Accounting | Methods |
| O'Donnel et al. | 2000 | IC: A Habermasian Introduction | Conceptual |
| Petty R and J Guthrie | 2000 | Intellectual Capital Literature Review : Measurement, Reporting and Management | Literature Review |
| Sullivan | 1999 | Profiting from Intellectual Capital | Management |
| Bontis | 1998 | Intellectual Capital: An Exploratory Study that Develops Measures and Models | Research |
| Koenig | 1997 | Intellectual Capital and How to Leverage it? | Theoretical |
| George and Kleiner | 1996 | How to Measure an Organisation's IC | Conceptual - Hay Method |
| Roninson & Kleiner | 1996 | How to Measure an Organisation's Intellectual Capital | Components |

### Table 2
### Measurement Indicators for Intellectual Capital Component

| **Internal Reporting** | | **External Reporting** | |
|---|---|---|---|
| *Advantages* | *Disadvantages* | *Advantages* | *Disadvantages* |
| Better decision making | Increased Cost | Increased transparency | Discloses sensitive information |
| Assessment of IC utilization | Creates risk by presenting opportunities to their employees which in time cannot be completed | Increased trust worthiness with employees and other stakeholders | Increased chances of manipulation |
| Aligns IC resources with strategic vision | Increased audit complexities | Effective marketing tool | Increased cost |
| Employee to profitability | | | Creates tax consequences |
| Current and future cash flow | | | |

# A Study of Credit Card Business in India during 1995-2005

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and

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## Abstract

This paper attempts to make a comparative study of credit cards of different bankers, growth rate of credit cards, cost-benefit analysis of users and bankers, demographic aspects and perception of users, financial impact etc. The study is conducted based on both primary and secondary data. The primary data have been collected from 370 customers and 100 merchants by two-stage sampling technique in and around Kolkata. Secondary data have been collected from credit card issuers, books, reports, journals, magazines and websites.

*Key words* : Credit Card; Bankers; Merchants; Users' Perception; Growth Rate; Cost-Benefit Analysis.

## 1. INTRODUCTION

The credit card is a small plastic card of the size of 3×2 inches, which provides users with unsecured loans based on individual credibility up to a pre-approved limit. In India credit cards were launched in the 1970s by some foreign banks namely Citibank, ANZ Grindlays bank, but the product started gaining popularity from the mid-1980s. It is since the mid-1990s that the usage has been expand-ing at an accelerated rate in this country. Credit card was originally invented in 1946 in the USA. Master, Visa, Amex, etc. are popular credit card providers of the world, all of which originated in the USA. In India as well we find that credit cards are operating in the same brands along with some local brands like Dinners, Inter-card etc.

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Credit cards have a significant contribution in national income, employment generation, credit creation, increasing the speed of money, promoting trade and commerce, enhancing purchasing power etc. Over the last two decades the business of credit card has grown at a very fast rate in India, specially in the last decade there has been a boom. The major players which are in this business in India include Citibank, ICICI Bank, Standard Chartered Bank, HSBC Bank, HDFC Bank, SBI, Alahabad Bank, Bank of Baroda, Andhra Bank and Canara Bank.

Not much work has been done in the area, particularly in India. A preliminary search reveals that in the USA substantial literature in this area is available. In India some write ups have been published in different dailies, magazines etc. But till date no major text or paper has been published in India in this area except Indian Bankers' Association who have done some job in this relation. RBI Act, SEBI Act and Banking Regulation Act are some of the relevant literature in this field. Some research organizations and management consultants have conducted some specialized studies in relation to credit card. These are referred to below.

Kahli (1993) made a thorough investigation about the credit card business as one of the most profit generating aspects in the bank. Das (1993) made a review of different credit cards of that time to make a comparative analysis of the card and ascertained that most of the cards had some basic features along with a lot of variation among different cards. Vetka Kumar (1993) tried to identify the facilities of credit card and concluded that the benefit of holding at least one credit card is as good as having the entire bank folio in the wallet. Satis (1995) made a survey to find the power and potential of credit card as electronic smart card and finally he claimed that the Indian market is highly potential for credit card business. Mathus (1996) worked on the processing part of credit card transactions and concluded that the process followed by all the service providers is a standard one and that the process is developed on a common platform.

Recently different Indian journals came out with write ups in the area of credit card business dealing with several aspects of credit card. Again, in the business section of different Indian dailies, many experts and practising bankers have written about their experiences in relation to credit card business, dealing with the aspects like social status, possibility of fraud, prevention of fraud, purchasing power, comparative analysis of different credit cards etc. This literature encourages us to make a study on the credit card business in India.

The study is made based on both primary and secondary data. The objectives of the study are to have an overview of the credit card business in India to understand the position of this product in the country and to make an assessment of and its impact on the nation as a whole. From the secondary data it is observed that the number of active credit cards is ever-increasing over the last two decades. The huge increase of membership is a clear-cut signal of the popularity of this plastic money . Not only that, in the 1990s there were only half a dozen bankers which were in this business, but in 2005 we find at least twenty commercial banks are issuing credit cards, either as Master card or as Visa card. In some cases the card are issued under the brand of Inter card, Dinners, Amex etc. The most popular credit providers of the world are Master and Visa, and there is hardly any exception in India in this context. The membership of Master and Visa has been neck to neck always, though Master card happens to be the pioneer in this regard in India. Among the bankers Citibank happens to be the leader in India in credit card business. It has been maintaining the lead since inception. Till today, Citibank is the largest issuer of credit cards in our county. Among the nationalized bank it is the SBI credit card which enjoys the most popularity. In the private sector, ICICI bank happens to be the leader. It is to be noted that the rate of growth of the membership of SBI and ICICI is much faster than that of Citibank over the last six years though Citibank continues to be the market leader. The average growth rate of credit card business in India over last ten years is 53.28%, which is really very good compared to other developing countries where the average growth rate is about 35%. It is mainly due to the fact that liberalization, privatization and globalization have taken place in the country during the period when consumerism and buyers' market flourished. As credit card provide instant unsecured loan and enhances the purchasing power, so it flourishes among the large middleclass people of the country. It can be predicted that the growth of credit card will keep going up and up in coming years, since only about 10% of the market is being captured as per CMIE report and as per the analysis in this study. Again, it is to be understood that Indians are by nature credit shy people unlike the western people who are spendthrift and rely heavily on credit cards and loans. In the comparative study of the credit card and debit card membership over last few years, it is seen that debit card is overtaking the credit card membership mainly because of the fact that Indians are credit shy people.

## 2. OBJECTIVES OF THE STUDY

The objective of the study is to have an overall view of the credit card business in India over the last decade. More specific objectives of the study are:

(a) To identify different credit cards in India and make a comparative study based on primary and secondary information available.

(b) To see the demographic profile of the users and their perception and opinion about different credit cards.

(c) To make an analysis of the growth pattern of credit card business in India.
(d) To have a cost-benefit analysis from the view point of consumers, bankers and merchants.
(e) To identify the problems of the business and to provide necessary suggestions to solve those problems.

## 3. RESEARCH METHODOLOGY

Both primary and secondary data are collected to achieve the stated objectives. In order to collect primary information from customers and merchants we developed two questionnaires through repeated pilot survey. 370 customers and 100 merchants were interviewed, by using two-stage sampling technique, in and around Kolkata. In the first stage some marketplaces were selected in and around Kolkata and in the second stage some customers and merchants in each marketplace were approached randomly for interview to fill up respective questionnaires. Secondary data were collected from different sources like different bankers (viz. Citibank, SCB, HSBC, ICICI, SBI etc.), books, reports, journals, magazines and websites. Most of the data were collected during 2003-05 and period of entire study is 1995 to 2005.

The statistical analysis of both primary and secondary data is done through SPSS package. Descriptive statistical tools, testing of hypothesis, analysis of variance and some forecasting techniques are used for the analysis and interpretation of data. For qualitative data analysis, ranking and different scaling techniques are adopted.

Some accounting tools like cost-benefit analysis, profitability analysis, asset–liability analysis, ratio analysis etc. are also used for data analysis.

## 4. ANALYSIS AND FINDINGS

The primary and secondary data are examined and analyzed thoroughly by different tools as stated earlier. The results of the analysis are presented below.

### 4.1 Users' Perception – An Empirical Study

In this section we are interested to study the general demographic profile of customers, their opinion and perception about different types of credit cards. The detailed statistical analysis and their interpretations are given below:

370 customers were interviewed out of which 71% are found to be male and rest are female.

The age group of the customers are widely varying. Around 10% are below 25 years, about 38% are in the age group 25-35years, 35% customers are in the age group 36-45 years and only 17% customers are above 45 years.

Regarding educational qualifications of users in the survey it is found that only 3% card holders are Secondary, 17% Higher Secondary, 60% Graduate and around 20% are having Post Graduation or equivalent professional degrees.

Occupation of 60% customers is service and 22% those of is business. Around 6% of customers are professionals, 5% are housewives and 7% are students.

The survey also reveals that the income level of 11% customers is below Rs.70,000/-, of 53% customers is between Rs.70,000/- to Rs.1,00,000/- and of 36% customers is above Rs.1,00,000/-.

The card holding pattern of the customers is that about 79% are holding any one credit card of any banker, 20% are holding two cards and only 1% customers hold more than two cards. Again, 48% of customers are holding Master card, 45% are holding Visa card and rest are holding other types of card.

The customer survey also reveals that the credit limit of 17% of them is below Rs.15000/-, 48% is between Rs.15000/- and Rs.25000/-, 27% is between Rs.25001/- and Rs.50000/- and only 8% of them is more than Rs.50000/-.

The preference of bankers by the customers is shown in the Table 1. Again, Table 2 shows that usage pattern of credit cards by the customers.

Table 1
**Preference of Banker by the Customers**

| Banker | Number of Customers | % |
|---|---|---|
| Citibank | 30 | 8.1 |
| Standard Chartered | 32 | 8.5 |
| HSBC | 20 | 5.4 |
| ICICI | 49 | 13.2 |
| SBI | 167 | 45.2 |
| BOB | 20 | 5.4 |
| Others | 52 | 14.2 |
| Total | 370 | 100.0 |

Table 2

**Usage Pattern of Credit Cards by the Customers**

| **Usage Pattern** | **Number of customers** | **%** |
|---|---|---|
| Restaurant & Hotel | 43 | 11.6 |
| Shopping | 227 | 61.4 |
| Fuel | 5 | 1.4 |
| Remittance | 17 | 4.5 |
| Cash Withdrawal | 75 | 20.3 |
| Asset Purchase | 2 | 0.5 |
| Others | 1 | 0.3 |
| Total | 370 | 100 |

Based on the test of independence to the cross table of preferred banker and preferred card of customers, it is found that these two attributes are not at all dependent (Chi-square = 28.126, p-value = 0.225). Preferred banker is also independent of qualification of customers (Chi-square = 47.009, p-value = 0.104).

However, the cross tables of preferred banker of customers and their occupations reveals that these two attributes are strongly dependent (Chi-square = 73.50, p-value = 0.000). Also preference of banker by the customers are varying from one income group to another (Chi-square = 51.101, p-value = 0.000).

Now, we can make further analysis based on primary data about consumers' opinion on credit card usage and service provided by the bankers. The users expressed their opinion on about 13 significant features of credit card on a five point Likert Summated Scale : 1 being highly satisfied and 5 being highly dissatisfied. The parameters are statement preparation, customer care, credit limit, interest rate, insurance, bonus point, ATM network, special offer, social acceptance, membership fees, value for money, acceptance by merchants, card loss protection etc. Consumers' opinion about credit card service features are analysed and average score distribution is given in Table 3.

## Table 3
## Consumers' Opinion about Credit Card Service Features

| Average Score | No. of Customers | % | Customers' Opinion |
|---|---|---|---|
| 1 – below 2 | 291 | 78.66 | Highly satisfied |
| 2 – below 3 | 58 | 15.67 | Satisfied |
| 3 – below 4 | 12 | 3.24 | Dissatisfied |
| 4 – 5 | 09 | 2.43 | Highly dissatisfied |
| Total | 370 | 100.00 | |

The descriptive statistical measures of the average score on thirteen features on opinion derived are shown below:

Maximum = 4.92, Minimum = 1, Mean = 1.799, Standard Deviation = 0.744,

Skewness = 1.925 (Positively skewed distribution) and Kurtosis = 4.063 (Leptokurtic distribution).

Next we will investigate, through analysis of variance, how the opinion of customers depends on different factors like gender, educational qualification, occupation, income, bankers etc. Table 4 depicts a clear picture of this phenomenon.

## Table 4
## Dependence of Users' Opinion on Different Factors

| Opinion on | F- Value | p-value | Conclusion at 5% level |
|---|---|---|---|
| Gender | 11.384 | 0.001 | Opinion highly depends on gender |
| Qualification | .506 | 0.084 | Opinion does not depend on qualifications |
| Occupation | 4.749 | 0.000 | Opinion highly depends on occupations |
| Income | 2.604 | 0.036 | Opinion depends on Income |
| Banker | 7.689 | .000 | Opinion strongly depends on bankers |

Next, we analyse consumers' perception about credit card. The parameters of perception are usefulness, social status, security, identity card, safety, lifestyle etc. It is also measured in a five point Likert Summated Scale. The results are shown in Table 5.

Table 5

**Consumer Perception of Credit Card Features**

| **Average Score** | **No. of Customers** | **%** | **Customers' Perception** |
|---|---|---|---|
| 1 – below 2 | 285 | 77.02 | Highly satisfied |
| 2 - below 3 | 66 | 17.83 | Satisfied |
| 3 - below 4 | 14 | 03.78 | Dissatisfied |
| 4 – 5 | 05 | 1.37 | Highly dissatisfied |
| Total | 370 | 100.00 | |

The descriptive statistical measures derived from the average score on six features of perception are shown below:

Maximum = 4.83, Minimum = 1.00, Mean = 1.736, Standard Deviation = 0.772

Skewness = 1.470 (Positively skewed distribution) and Kurtosis = 1.707 (Leptokurtic distribution).

Again, using analysis of variance, our interest is to check whether the perception of customers depend on different factors like gender, educational qualification, occupation, income, bankers etc. Table 6 provides a clear idea as to this.

Table 6

**Dependence of Users' Opinion on Different Factors**

| **Perception on** | **F-Value** | **p-value** | **Conclusion at 5% level** |
|---|---|---|---|
| Gender | 17.995 | .000 | Perception highly depends on gender |
| Qualification | .808 | .564 | Perception does not depend on qualifications |
| Occupation | 4.385 | .005 | Perception highly depends on occupations |
| Income | 2.996 | .019 | Perception depends on income |
| Banker | 7.639 | .000 | Perception strongly depends on bankers |

To compare the opinion and perception of inter banker customers we consider the mean and standard deviation of scores in Table 7.

Table 7

**Consumer' Opinion and Perception on Credit Cards of Different Bankers**

| Banker | No. of customers | Opinion Score | | Perception Score | |
|---|---|---|---|---|---|
| | | Mean | S.D. | Mean | S.D. |
| Citibank | 30 | 1.636 | 0.667 | 1.672 | 0.697 |
| Stand-Chat | 32 | 2.392 | 1.365 | 2.234 | 1.235 |
| HSBC | 20 | 1.912 | 0.875 | 1.892 | 0.887 |
| ICICI | 49 | 2.088 | 0.610 | 2.140 | 0.813 |
| SBI | 167 | 1.611 | 0.500 | 1.529 | 0.508 |
| BOB | 20 | 1.642 | 0.771 | 1.535 | 0.799 |
| Others | 52 | 1.875 | 0.706 | 1.772 | 0.794 |

The above table reveals that regarding opinion of credit cards of different bankers the SBI customers (mean = 1.611) are very much happy with the quality of service. Next to SBI we have got Citibank (mean = 1.636) and last position is occupied by Standard Chartered bank (mean = 2.392).

However, regarding perception of credit cards of different bankers the SBI again occupies the number one position (mean = 1.529), second position by BOB (mean = 1.535) and the last position is occupied by Standard Chartered bank (mean = 2.234).

From merchants' data, apart from some general information, it is revealed that there is a significant improvement of credit – cash ratio from the year 1995 to 2005. As a result, vast majority (90%) of them agreed that acceptance of credit cards of different bankers have undoubtedly boost up their sales. They also believe that credit cards have changed the buying behavior of customers.

### 4.2. Growth Pattern

To find the future membership trend of credit cards (C) in India, the following quadratic or second degree trend equation is found to be the best fitted curve from the available data :

$$C_t = -0.0476 + 1.8245t + 1.0292t^2 \quad \text{with R-square} = 0.997.$$

We have also studied the future trend of Master card (M) and Visa card (V) separately. Again, in this case appropriate trend curves are found to be quadratic which are as follows:

$$M_t = -0.6905 + 1.969t + 0.3214t^2 \quad \text{with R-square} = 0.998$$

$$V_t = 3.4762 - 2.6067t + 0.9123t^2 \quad \text{with R-square} = 0.992$$

Based on the above equation predicted membership (in lakhs) of Master card (M), Visa card (V) and total credit card (C) for 2005 to 2010 is given in Table 8 and Figure 1.

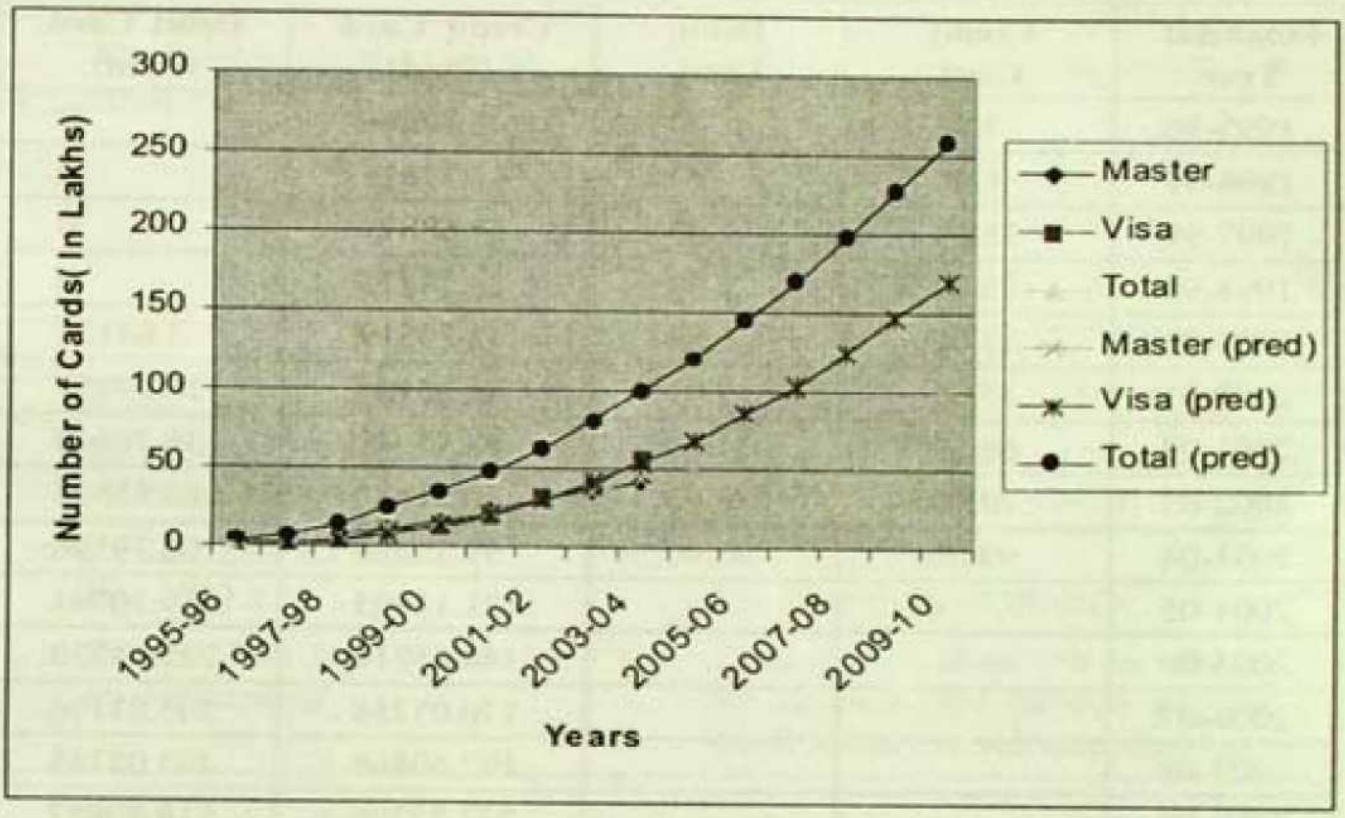
Table 8

**Prediction of Membership(in Lakhs) of Master, Visa and Total Credit Cards in India**

| Financial Year | Master | Visa | Total | Master (pred) | Visa (pred) | Total (pred) |
|---|---|---|---|---|---|---|
| 1995-96 | 2 | 1 | 3 | 1.60000 | 1.78182 | 2.80606 |
| 1996-97 | 5 | 2 | 8 | 4.53333 | 1.91212 | 7.71818 |
| 1997-98 | 8 | 4 | 15 | 8.10952 | 3.86710 | 14.68874 |
| 1998-99 | 11 | 10 | 23 | 12.32857 | 7.64675 | 23.71775 |
| 1999-00 | 16 | 13 | 33 | 17.19048 | 13.25108 | 34.80519 |
| 2000-01 | 22 | 19 | 47 | 22.69524 | 20.68009 | 47.95108 |
| 2001-02 | 32 | 31 | 68 | 28.84286 | 29.93377 | 63.15541 |
| 2002-03 | 37 | 38 | 79 | 35.63333 | 41.01212 | 80.41818 |
| 2003-04 | 41 | 56 | 99 | 43.06667 | 53.91515 | 99.73939 |
| 2004-05 | | | | 51.14286 | 68.64286 | 121.11905 |
| 2005-06 | | | | 59.86190 | 85.19524 | 144.55714 |
| 2006-07 | | | | 69.22381 | 103.57229 | 170.05368 |
| 2007-08 | | | | 79.22857 | 123.77403 | 197.60866 |
| 2008-09 | | | | 89.87619 | 145.80043 | 227.22208 |
| 2009-10 | | | | 101.16667 | 169.65152 | 258.89394 |

Figure 1

**Prediction of Membership(in Lakhs) of Master, Visa and Total Credit Cards in India**



Debit card is a variant of plastic money. It is not a liability product like credit card but used exactly in a similar way by the customers to make payments from the savings bank account at point of sales. Since both these cards are being used by the customer in the same manner , we can have a comparative look at the credit card and debit card membership in India since 1995-96. From Table-9 and Figure-2 it is clear that debit card becomes a threat to credit card and is going to occupy the lion's share of the credit card market, though it is a product which was launched at least one and a half decade after the credit card. This is so because by nature Indians are credit shy. In case of debit card only a savings bank account is sufficient for its issuance. But credit card, which needs a lot of credit worthiness, contributes a lot to the tremendous growth of debit cards in India.

To find the future membership trend of debit cards (D) in India, the following cubic trend equation is found to be the best fitted curve from the available data:

$D_t = 7.6802 - 4.9206t - 0.3622t^2$ with R-square = 0.952.

Based on the above equation predicted membership (in Lakhs) of debit card (D) compared to for 2005 to 2010 is given in Table 9 and Figure 2.

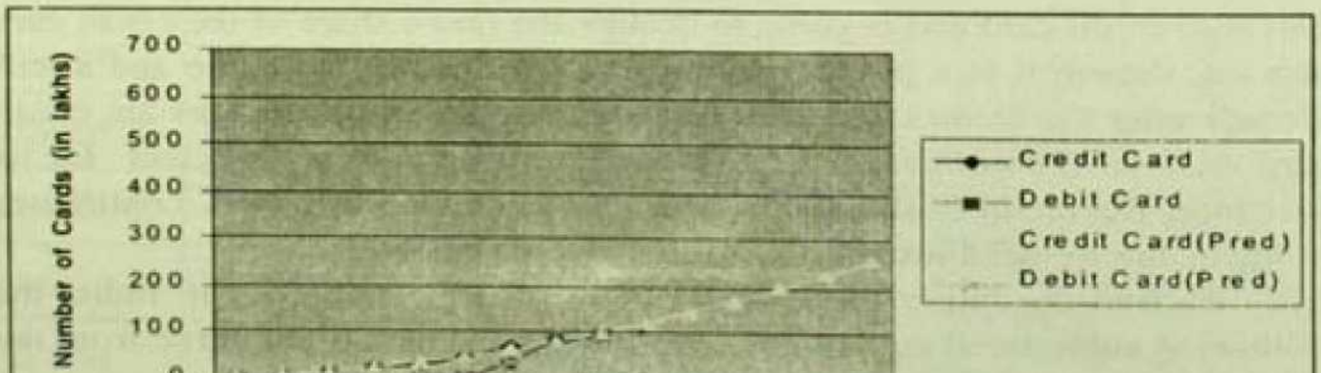
Table 9

**Future Position of Credit Card & Debit Card Membership (in Lakhs) in India**

| Financial Year | Credit Card | Debit Card | Credit Card (Pred) | Debit Card (Pred) |
|---|---|---|---|---|
| 1995-96 | 3.00 | .00 | 2.80606 | 0 |
| 1996-97 | 8.00 | .00 | 7.71818 | 0 |
| 1997-98 | 15.00 | .00 | 14.68874 | 0 |
| 1998-99 | 23.00 | .50 | 23.71775 | 0 |
| 1999-00 | 33.00 | .80 | 34.80519 | 3.64156 |
| 2000-01 | 47.00 | 5.00 | 47.95108 | 16.29957 |
| 2001-02 | 68.00 | 35.00 | 63.15541 | 36.76349 |
| 2002-03 | 79.00 | 85.00 | 80.41818 | 66.45505 |
| 2003-04 | 99.00 | 98.00 | 99.73939 | 106.79596 |
| 2004-05 | | | 121.11905 | 159.20794 |
| 2005-06 | | | 144.55714 | 225.11270 |
| 2006-07 | | | 170.05368 | 305.93196 |
| 2007-08 | | | 197.60866 | 403.08745 |
| 2008-09 | | | 227.22208 | 518.00087 |
| 2009-10 | | | 258.89394 | 652.09394 |

Figure 2

**Future Position of Credit Card & Debit Card Membership (in Lakhs) in India**



## 4.3 Cost-Benefit Analysis

At this juncture we need to make a cost-benefit analysis (CBA) from the point of view of different stakeholders. Here we will discuss CBA from the view point of customers, bankers and merchants respectively.

The following table shows a cost-benefit analysis from the point of view of customers.

Table 10

**The CBA of Customers**

| Costs | Benefits |
|---|---|
| (a) Joining fees varies from Rs.200/- to Rs.2000/-.with different bankers cards. | (a) Interest free credit for about 50 days at best (10% - 12% of interest is saved / earned) |
| (b) Annual fees Rs.200 to Rs. 2500 p.a. | (b) Free insurance of Rs. 20,000-Rs.10,00,000/-. |
| (c) Interest 30% to 36% p.a. on outstanding | (c) Discounts of about 5% to 15% on purchase paid through various credit cards for selected merchants. |

Table – 11 shows a cost–benefit analysis from the point of view of bankers

Table 11

**The CBA of Bankers**

| Costs | Benefits |
|---|---|
| (a) Card production cost is Rs. 50/- per Card on an average. | (a) Membership fees Rs. 200/- to Rs. 2000/- per card p.a. |
| (b) Mailing expense Rs. 100/- p.a. per card, on an average budget. | (b) Joining fees Rs. 200/- to Rs. 2500/- per card. |
| (c) Promotion cost 1% to 2%. | (c) Interest earning 30% to 36% p.a. on outstanding. |
| (d) Administrative cost 3% to 4%. | (d) Commission from merchants 1% to 4% of the sale proceed. |
| (e) Insurance and other cost 1% to 2%. | (e) Automatic advertisement for the banker. |
| (f) Bad debt about 1% to 2%. | (f) Generation of banks asset through disbursement of loan. |

Finally, let us make a cost–benefit analysis from the point of view of merchants in the following table.

Table 12
**The CBA of Merchants**

| Costs | Benefits |
|---|---|
| (a) Membership Fees which may be as high as Rs. 10.000/-. | (a) Boost up sales, and automatic promotion of shop. |
| (b) 1% - 4% of sale proceed as banks service charge for credit card transition. | (b) Free insurance of Rs.20,000/- to Rs.10,00,000/-. |
| (c) Interest 30% to 36% p.a. on outstanding. | (c) Increase sales with no bad-debt possibility. |

## 5. CONCLUDING OBSERVATIONS

(a) From the analysis of primary data, it is observed that most of the credit card consumers are highly satisfied with the service of credit card providers.

(b) The prediction of the membership of credit cards in India shows that there is a tremendous growth potential of credit card business in India.

(c) From the cost-benefit analysis it is observed that the benefit is more than the cost from the point of view of all stakeholders. So it is always a win-win situation .

(d) Credit card provides the most popular consumer loan both from bankers' and from users' points of view in India.

(e) Credit card business is rapidly expanding in India, but it is facing tough challenges from debit cards .

(f) Citibank is not only the pioneer but also the market leader in credit card business in India, but it is now facing tough competition from SBI and ICICI bank.

(g) It is learnt from interviews with the bankers that average bad debt loss in the business is about 2% to 3%.

(h) Most of the merchants accept the fact that credit cards boost up sales, though there are about 2% to 4% commission expenditure as well.

(i) As per CMIE report, credit card is having a tremendous economic impact by effecting savings in the production of paper currency, creating credit, increasing the speed of money, increasing the purchasing power and boosting up turnover.

(j) Credit card fraud is increasing day by day. There are several factors that are responsible for this. One of the factor relates to balance transfer. The balance transfer offer in a sense is immoral and promoting teeming and lading process of fraud. It is generating defaulters in the long run. It is observed that the percentage of defaulters before balance transfer facility was almost half of that of the present level.

(k) The problem of unsolicited card and hard selling of credit card is creating unwanted inconveniences among credit card users.

(l) Interest rates are too high in credit card loan, once the consumer avail the revolving facility. It is as high as 24% to 36 % p.a. compared to 8% to12 % normal interest rate.

## 6. SUGGESTIONS

(a) Interest rate on credit card should be reduced. Credit cards should be brought to the reach of the masses. As there is tough competition with other plastic money such as debit cards, charge cards and smart cards, credit card providers should formulate new strategies to penetrate the masses.

(b) Laws should be strict in relation to the protection of both card holders and bankers.

(c) Electronic Data Capture (EDC) machine net work must be enhanced to assure fast and safe point of sales (POS) transactions of credit cards.

(d) e-commerce gateway of payment should be made with more security to make credit card transactions safer, otherwise people will not use it.

(e) Balance transfers should not be allowed since it encourages bad debt and teeming and lading process of fraud.

(f) More co-branding and multi-branding credit cards should be launched in order to provide multiple facilities in the same card for hassle free transactions.

(g) Hard selling of credit cards must be controlled, specially the cold calls should be stopped.

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# Imperatives of FDI in India: The Key Issues

**Swapan Kumar Chakrabarti***

## Abstract

The current strategy of attempting an FDI-fuelled infrastructure development has resulted in an improvement in India's Balance of Payments. But unless it is linked with export growth, the policy is likely to be sterile for India so far as the external sustainability is concerned. It is, therefore, suggested that a powerful alternative for India's growth strategy under the current parameters laid down by the reforms process in consonance with the world-wide phenomenon of globalisation lies in devising a stable and judicious linkage of the inflow of FDI with export production. The linkages should be built in a manner that is capable of harnessing, through the utilisation of the forthcoming FDI, the vast potential of the country's small scale industry, agriculture and the domestic retail trade sector, each holding out palpably encouraging employment implications.

***Key words*** : Foreign Direct Investment; External Sustainability; Devaluation; LERMS; Export Intensity; Merchandise Trade Balance.

## 1. INTRODUCTION

As is well known, the recent surge in the Foreign Direct Investment (FDI) in India has entailed a short-term improvement in her Balance of Payments (BOP) through the Capital Account proper. It is in this context that the present paper purports to emphasise a vastly important imperative for the country to translate this short-term improvement into a long-term gain towards external sustainability via the Current Account. This conversion can be made possible by adopting a deliberate policy of channelising the inflow of the forthcoming FDI primarily in export production. For the sake of expositional convenience, we propose to categorise the policy pursued by the Government of India towards combating the country's external disequilibrium with reference to two distinct regimes: the pre-reforms and the post-reforms periods. In the pre-reforms era up to the end of the 1980s, the policy was basically inward looking, reflecting export pessimism and emphasis on import substitution. Under more or less a fixed exchange rate regime, several attempts of devaluation were initiated towards the increase in export earnings. But they failed to produce effective results. Certain other specific measures of export promotion also, most often, met with limited success and created a technology gap in the economy.

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In contrast, the post-reforms period witnessed major policy changes like lessening of import controls and a gradual shift towards a market determined exchange rate. The framework is based on the tenets of the on-going phenomenon of what has come to be known as globalisation, featuring a liberal and fast flow of information, technology, investment and output across the nations. In the following period, however, the current account has shown improvement and the capital account also has been eased by way of undergoing a compositional shift from debt to non-debt elements like Foreign Direct Investment (FDI). Special efforts are being initiated for inviting FDI in selected sectors for increased inflow of foreign exchange. Against this backdrop, this paper ventures, first, to examine how far the present pattern of FDI inflows acts to promote India's export growth in consonance with the long-term objective of external sustainability and, secondly, to identify the key issues relating to the imperatives of designing the overall pattern of FDI selection in the country for achieving growth with distributive justice.

## 2. OBJECTIVES

Specifically, the objectives of the paper are laid down as under:

(1) To begin with, it intends to offer a rigorous exposition of the fact that the use of devaluation as a vehicle to boost export earnings is basically an absurd proposition for India, unless there is a thorough revamping in her export structure so as to make it diversified and competitive in the international market. In this connection, it then aims at reviewing the justification of inviting FDI in the country.

(2) Secondly, it seeks to ascertain the impact of the inflow of FDI so far received by India on her exports. In this context, it emphasises that the current strategy of attempting an FDI-fuelled infrastructure development, without linking it with export growth, is again likely to be sterile for India so far as external sustainability is concerned. This is equally true when judged from the long-term growth and distributional perspectives of the Indian economy, for one can hardly afford to ignore its chronic labour-surplus and poverty-stricken nature.

(3) Finally, it is suggested that a powerful alternative for India's growth strategy under the current parameters laid down by the reforms process lies in devising a stable and judicious linkage of the inflow of FDI with export production. The linkages should be built in a manner that is capable of harnessing the vast potential of the small scale industry, agriculture and the domestic retail trade sector, each holding out encouraging employment implications.

## 4. EXPORT GROWTH THROUGH DEVALUATION: A FUNDAMENTAL OBSTACLE

Till the 1980s, several attempts of devaluation were initiated to boost export earnings. Alongside this, a policy of import substitution coupled with an administered import control mechanism was also followed. The implicit notion was that devaluation of the domestic currency ( *i.e.* an increase in the exchange rate) was capable of enhancing the inflow of foreign exchange via export growth. Incidentally, it can be shown that the export generated supply curve of foreign exchange is necessarily backward bending. Of added significance, its negatively (positively) sloped arm corresponds to the inelastic (elastic) segment of the foreign demand curve relating to domestic exportables. Unfortunately, India's exportables during the period under review chiefly related to farm sector products and traditional items that used to be traded in the international market at the inelastic part of the foreign demand curve. As a result, a higher exchange rate was not supposed to increase export earnings. The policy planners apparently ignored this truth, as it was manifested in the repeated failures of the devaluation measures in India in the pre-reforms period.

## 5. EXTERNAL MANAGEMENT: POST 1991 SCENARIO

The Indian policy of managed float, pegging the rupee to a basket of select currencies of her major trading partners, came to be subjected to severe strain of a crisis proportion in 1991 because of a fundamental misalignment of the currency. The current account (Table 1) showed a colossal deficit of 9680 million US dollars in 1990-91 (3.1% of the GDP), largely owing to high cost of oil imports following the Gulf War and sluggish exports owing to a high inflation rate. It was necessarily reflected in a large fiscal deficit as well (9.4% of GDP in 1990-91). To obviate the pressure, the Reserve Bank initiated in July 1991 a two-step depreciation of the rupee by nearly 19%. It was followed by introduction of the Liberalized Exchange Rate Management System (LERMS) in March 1992. The new scheme was basically a dual system with a mix of both market mechanism and official pegging, with emphasis on the former.

Table 1

**Indian's Balance of Payments on Current Account**
**(US$ Millions)**

| Years | Merchandise |  |  | Invisibles (Net) | Current Account Balance |
|---|---|---|---|---|---|
|  | Exports f.o.b. | Imports c.i.f. | Trade Balance |  |  |
| 1985-1986 | 9461 | 17294 | -7834 | 2967 | -4867 |
| 1986-1987 | 10413 | 17729 | -7316 | 2756 | -4560 |
| 1987-1988 | 12644 | 19812 | -7168 | 2317 | -4852 |
| 1988-1989 | 14257 | 23618 | -9361 | 1364 | -7997 |
| 1989-1990 | 16955 | 24411 | -7456 | 615 | -6841 |
| 1990-1991 | 18477 | 27914 | -9437 | -243 | -9680 |
| 1991-1992 | 18266 | 21064 | -2798 | 1620 | -1178 |
| 1992-1993 | 18869 | 24316 | -5447 | 1921 | -3526 |
| 1993-1994 | 22683 | 26739 | -4056 | 2898 | -1158 |
| 1994-1995 | 26855 | 35904 | -9049 | 5680 | -3369 |
| 1995-1996 | 32311 | 43670 | -11359 | 5449 | -5910 |
| 1996-1997 | 34133 | 48948 | -14815 | 10196 | -4619 |
| 1997-1998 | 35680 | 51187 | -15507 | 10007 | -5500 |
| 1998-1999 | 34298 | 47544 | -13246 | 9208 | -4038 |
| 1999-2000 | 37542 | 55383 | -17841 | 13143 | -4698 |
| 2000-2001 | 44894 | 59264 | -14370 | 11791 | -2579 |
| 2001-2002 | 44915 | 57618 | -12703 | 14054 | -1351 |

Source: RBI, Handbook of Statistic on the Indian Economy, 2002-03

Of significance, the following period staged a recovery in the current account deficit owing to a sharp rise in the invisible receipts in the era of globalisation and a spurt in merchandise exports primarily because of a promising improvement in the terms of trade of agricultural and allied exports. Thus the export recovery was basically not the result of devaluation of 1991, although it is true that the new liberalized system of external management had somewhat brightened the prospects of exports of manufactured items. But one must not fail to take note of a really startling development that occurred in the Capital Account. In sharp contrast to the earlier predominance of debt receipts, the Capital Account witnessed a major surge (Table 2) in the inflows of foreign capital, especially Foreign Direct Investment (FDI).

Table 2

**Growth of Capital receipts (US $ million)**

| Year | Fireign Investment | | External Assistance (Net) | | Commercial Borrowings | | NRI Deposits | | Rupee Debt Service | Other Capital | Total Capital Receipts |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | US$ Million | % Share in Total capital Receipts | US$ Million | % Share in Total capital Receipts | US$ Million | % Share in Total capital Receipts | US$ Million | % Share in Total capital Receipts | | | |
| 1986-1987 | 195 | 4.32 | 1414 | 31.34 | 1966 | 43.5 | 1290 | 28.59 | - | -353 | 4512 |
| 1987-1988 | 434 | 8.6 | 2271 | 45 | 976 | 19.34 | 1419 | 28.12 | - | -53 | 5047 |
| 1988-1989 | 357 | 4.43 | 2216 | 27.48 | 1894 | 23.49 | 2510 | 31.13 | - | 1087 | 8064 |
| 1989-1990 | 410 | 5.88 | 1856 | 26.6 | 1777 | 25.47 | 2403 | 34.44 | - | 531 | 6977 |
| 1990-1991 | 103 | 1.43 | 2210 | 30.75 | 2248 | 31.27 | 1536 | 21.37 | -1193 | 2284 | 7188 |
| 1991-1992 | 133 | 3.52 | 3037 | 80.41 | 1456 | 38.55 | 290 | 7.68 | -1240 | 101 | 3777 |
| 1992-1993 | 557 | 18.97 | 1859 | 63.32 | -358 | -12.9 | 2001 | 68.15 | -878 | -245 | 2936 |
| 1993-1994 | 4235 | 43.68 | 1901 | 19.61 | 607 | 6.26 | 1205 | 12.43 | -1053 | 2800 | 9695 |
| 1994-1995 | 4922 | 53.76 | 1526 | 16.67 | 1030 | 11.25 | 172 | 1.88 | -983 | 2489 | 9156 |
| 1995-1996 | 4902 | 104.54 | 883 | 18.83 | 1275 | 27.19 | 1103 | 23.52 | -952 | -2522 | 4689 |
| 1996-1997 | 6153 | 53.92 | 1109 | 9.72 | 2848 | 24.96 | 3350 | 29.36 | -727 | -1321 | 11412 |
| 1997-1998 | 5390 | 53.84 | 907 | 9,06 | 3999 | 39.95 | 1125 | 11.24 | -767 | -643 | 10011 |
| 1998-1999 | 2412 | 29.2 | 820 | 9.93 | 4362 | 52.81 | 960 | 11.62 | -802 | 508 | 8260 |
| 1999-2000 | 5191 | 46.77 | 901 | 8.12 | 313 | 2.82 | 1540 | 13.87 | -711 | 3866 | 11100 |
| 2000-2001 | 5102 | 60.49 | 427 | 5.06 | 4011 | 47.55 | 2317 | 27.47 | -617 | -2805 | 8435 |
| 2001-2002 | 5925 | 56.94 | 1204 | 11.57 | -1147 | -11.02 | 2754 | 26.47 | -519 | 2189 | 10406 |

Source: RBI, Handbook of Statistic on the Indian Economy, 2002-03

## 6. FDI FOR FOREIGN EXCHANGE PER SE OR EXPORT GROWTH ?

It has already been seen that during the fixed exchange rate regime, devaluation failed to boost India's export earnings. Towards this end what is needed is a thoroughly diversified and competitive export structure, especially of manufactured items. In fact under the present global environment of competition, India has no other option than to concentrate on manufactured goods as the core of her export efforts. But fulfilment of this condition without world-class technology is rather a remote possibility for India. It is this point that constitutes one major justification for inviting FDI in the country, so far as the forthcoming foreign investment can go a long way as a catalyst of augmenting the Indian exports of manufactured goods. Viewed from this standpoint, the recent surge of FDI into India is certainly a welcome feature. But the biggest question is how far this export-augmenting role of FDI is receiving attention of our policy planners.

The phenomenal growth in FDI experienced by the Indian economy since the early 1990s is evident in the following figures. It increased from 97million US dollars in 1990-91 to 586 million US dollars in 1993-94. Data available in the GOI Economic Survey 2002-03 (p.120) indicate that there was a robust increase in the flow to 2633 million US dollars in 1998 and further to 3403 million US dollars in 2001. The annual average growth rate during 1997-2001 worked out at an impressive 10.4%. Foreign investment in India as percentage to total capital formation in the country picked up from a paltry 0.12 in 1990-91 to a reasonably impressive 4.64 in 2000-01 (Source: CMIE, National Income Statistics, January 2003 and RBI Handbook of Statistics on the Indian Economy, 2002-03). Here, even at the cost of repetition, we would like to urge that the Government's policy of reforms-oriented liberalization entailing this sharp growth in FDI is justified if it is simultaneously aimed at satisfing two objectives: (1) augmenting the inflow of foreign exchange by the foreign investment content itself and (2) making the foreign investment and technology instrumental in rendering the Indian exports more competitive, so as to ensure a more rapid growth of export earnings towards external sustainability. In other words, FDI in India must play a twin role: inducing increased inflow of foreign exchange towards short-run improvements in the BoP and bringing about a sustainable increase in the manufactured exports towards a long-run improvement in the external payments situation.

The more important context of external sustainability instantly prompts us to emphasise that the FDI should be selected in such a way that export-oriented manufacture is encouraged in so far as it could enable India to expand her exports with both quality and competitive prices. Incidentally, in contrast, the FDI liberalization policy of the Government of India as announced in 2001 indicates that the major sectors attracting FDI include airports, integrated townships and housing, hotel and tourism sectors, telecom services, banking, urban water management and infrastructure including roads and bridges, defence production and certain categories of pharmaceuticals. A closer look at the sectors as contained in the list suggests three important features of the policy: (1) the objective of export growth through the increase in FDI is rather neglected, (2) urban infrastructure development is emphasized, and (3) the policy is palpably devoid of any rural slant altogether.

## 7. EXPORT OBJECTIVE NEGLECTED

In no way we tend to surmise that the role of foreign direct investment in raising Indian exports is distressing. Uptill now, at least, this is a reality. The RBI publication 'Annual Report on Currency and Finance, 2002-03' indicates that the working of the foreign investment companies in India has left a marginal impact on her exports during the period from 1990-91 to 2001-02. Their net impact on the merchandise trade balance during the same period is rather negative because their export intensity (value of exports as percentage of value of production) is considerably on the lower side in relation to their import intensity. The manufacturing sectors in which this phenomenon is pronounced include engineering, chemicals and chemical products, rubber and plastic products, electrical machinery and motor vehicles. The implication is that the foreign exchange earnings accruing to India from the exportables of these companies compare unfavourably with the outflow of foreign exchange from India caused by their production operations in the country. One plausible reason behind this is that these companies seek not so much to export from India as to maximize their market share in India itself. But its implication on the role of FDI on Indian exports is not much impressive. An overview of the contribution of foreign investment of Indian exports is given in Table 3.

## 8. STABILITY

Without a steady growth of export earnings, a sustained inflow of foreign exchange is hardly possible. Use of FDI in urban infrastructure development acts as one time investment with its usual multiplier effects on income. In fact, the recent spurts in the country's growth rate (nearly 8%) are plausibly attributable to this factor. This short-run pick-up in the tempo of growth is soon likely to fade out for two reasons:

(1) This nature of infrastructure shaping foreign investment will cease to be pumped into or attain its reasonable limit in the near future, and

(2) This kind of FDI is usually a parking investment and hence highly volatile in nature (instances of foreign disinvestment are not far to seek, one latest specimen being constituted in the recent Malayasian withdrawal in aviation).

Table 3

**Contribution of Foreign Investment to Indian Exports in the 90s: Selected Sectors**

| | **Items** | **Average : 1990-91 to 2001-2002** | |
|---|---|---|---|
| | | **Export Intensity** | **Import Intensity** |
| **1** | **2** | **3** | **4** |
| 1 | Engineering | 7.5 | 11.5 |
| 2 | Chemicals, Chemical Products | 8.7 | 11.0 |
| 3 | Trading/Wholesale and Retail Trade | 11.4 | 11.6 |
| 4 | Rubber/Plastic Products | 8.7 | 10.8 |
| 5 | Machinery and Machine Tools | 11.5 | 13.1 |
| 6 | Electrical Machinery and Apparatus | 6.8 | 11.6 |
| 7 | Motor Vehicles and Other Transport | 7.7 | 10.4 |
| 8. | Computer and Related Activities | 14.3 | 3.6 |
| 9 | Tea Plantations | 19.1 | 0.7 |
| 10 | All Textiles | 35.1 | 13.6 |
| 11 | Food Products and Beverages | 12.4 | 3.4 |
| | **Total** | **8.9** | **10.7** |

Source : RBI: Annual Report on Currency and Finance, 2002-03

## 9. EMPLOYMENT GENERATION: A FAR CRY

The FDI forthcoming in the aforesaid sectors, it is well known, is undertaken by the Multinational Corporations (MNCs), using a highly capital-intensive technology with a markedly restricted scope for wage employment. On the other hand, the joint-good character of their knowledge-based assets enables them to gain substantial cost advantage over the local firms of the host country. This is likely to generate a chain of adverse effects:

(1) Employment will shrink considerably.

(2) The host country firms (our domestic firms) will succumb to the competitive edge of the MNCs, resulting in colossal amount of job losses in the domestic sector firms hitherto operating (especially in the SSI sector). The large-scale unemployment will create social imbalances and increased inequality-cum- tensions, thereby leading to added social costs. In fact the large inflow of FDI is likely to generate a 'jobless' growth in India.

(3) A strong likelihood of demand deficiency arising from a sizeable job shrinkage in the non-agricultural sector with a concomitant purchasing power failure will contradict and defeat the very objective of FDI and place the economy on a lower growth track in the long-run.

## 10. FDI IN THE RETAIL SECTOR?

The position will simply be all the more aggravated if the Government finally ventures to implement the proposed induction of FDI in the retail trade sector. It goes without saying that the considerable amount of employment potential that still exists in this sector will suffer a disastrous setback because of the very nature of the MNC technology. On the other hand, excepting for an immediate inflow of foreign exchange through the Capital Account, there is no possibility of a compensating gain from FDI in the retail sector because foreign investment in this sector has hardly any export implication.

## 11. MODERATING THE PATTERN OF FDI: THE IMPERATIVES

From the aforesaid analysis it follows that the present pattern of FDI inflow in India is far from being able to meet the long-run objective of external sustainability. Towards this end what is warranted is utmost emphasis on taking full advantage of the FDI by way of its judicious utilisation in the diversification of India's export production, particularly of manufactured items.

It is imperatively necessary to discourage the inflow of FDI in sectors like soft drinks, potato chips and the like, unless they have export contributions. On the other hand, the Government policy should be more emphatic on endorsing FDI for achieving a substantial export growth. Secondly, the choice of the foreign investment must ensure the setting up of suitable linkages with the country's agriculture, small-scale industry and the retail sector, each having palpable employment implications. The Government's planning machinery, at both the central and the state levels, has a vital role in designing the appropriate linkages. One important lesson from the experience of the foreign companies (Table 3) is that the performance of the sectors including Tea, Textiles, Food Products and Beverages has been conducive to export growth. The foreign investment may be invited to these sectors and similar other sectors in a much bigger way.

## 12. CONCLUSION

The challenge of repayment of external debt is a stark reality for India. At the same time, there is no gainsaying the fact that the dictates of the world wide phenomenon of globalisation cannot be ignored. Finally it remains equally imperative that the Indian economy with a steadily rising labour force needs a sustained growth with distributive justice. An optimal solution, subject to all the three constraints, can be struck only by a judicious utilization of FDI for two intertwined long-run objectives, namely, increased export earnings by making Indian exportables more competitive and a long-term sustainable growth with distributive justice.

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# Treasury Management – The Emerging Perspectives in a Globalized and Digitized Economy

**Tanupa Chakraborty***

## Abstract

Since globalization and deregulation of world economies, and rapid advancements in technology in recent times have brought about unprecedented levels of challenges and opportunities to business houses, treasury management is undergoing significant technological transformation in order to enable an organisation to stay ahead of its competitors in today's globalized and digitized environment. So, in order to have a comprehensive understanding of the true nature and significance of technological changes that are taking place in the realm of treasury management, this article makes a modest attempt to elaborate the concept, objectives and applications of treasury management and the role of treasury manager in today's environment.

*Key words* : Treasury Management; Treasurer; Cash Pooling; ANSER; Straight-through Processing.

## 1. INTRODUCTION

Over the past decade, the world of business has witnessed gradually disappearing geographical and political boundaries and a substantial economic growth primarily due to deregulation, globalization and opening up of tightly controlled markets, and rapid advancements in technology. These events have not only brought about fundamental, widespread and irreversible changes in the way businesses are run but have also opened up new opportunities and raised the expectations of business houses. However, along with the opportunities for economic growth come the challenges of successfully managing that growth. There is a broad spectrum of issues ranging from managing the increased exposure to world markets and worldwide risks, to controlling cash and funding expansion. At the heart of

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controlled growth lie treasury management activities such as managing and providing liquidity, foreseeing and minimizing risks, facilitating and supporting trade and business etc., which, in times of rapid change and growth, can become an extremely challenging one.

An effective treasury management is undoubtedly the most crucial task in the realm of corporate finance. The sustainability and prosperity of a business house depends on how well it manages its treasury. The importance of managing treasury can be gauged from UNI's (United News International) recent release which reported that India's second largest commercial bank, the Industrial Credit and Investment Corporation of India (ICICI) bank, has suffered a loss of Rs.1 crore owing to lapses in its treasury management. With globalization of world economies and mobilization and deployment of funds from or in other countries, the complexities in treasury management have increased. The technological developments like the internet connectivity and allied networking paradigms have enabled interactivity and straight– through processing, and real-time consolidation of information on a global scale and hence have added a new dimension in treasury management. Accordingly, in order for a business to be successful in this 21st century, treasury management must effectively address the problems posed by globalized and digitized economies. Thus, this increasingly integrated and interdependent financial environment has necessitated a review of the field of treasury management to gain an insight into how the treasury functions might evolve to maintain the growth momentum and optimize their central roles in the continuing drive for success of the business.

In this backdrop, the main objective of the article is to showcase the true appeal and relevance of treasury management today by providing a basic understanding of its concepts, objectives, and applications and role of treasury managers in the changing environment.

The remaining part of the article has thus been organized as follows. Section 2 deals with the conceptual aspects of treasury management. Section 3 outlines the objectives of treasury management. The technological changes that have been brought about in treasury management applications to respond to the challenges posed by globalization and liberalization of world economies are discussed in section 4. Section 5 describes the role of treasurers in today's globalized and digitized environment. Finally, conclusions are drawn in section 6.

## 2. CONCEPT OF TREASURY MANAGEMENT

Treasury management may be defined as the management of cash flows, banking, money market and capital market transactions, and the effective control of the risks associated with these activities in pursuit of optimum performance consistent with such risks. Thus, this definition embraces an organization's use of capital and project financings, borrowings, investments, and hedging (i.e., risk minimising) instruments and techniques.

Treasury management is an important function in every organization, be it a domestic, regional or multinational company in the private sector or an enterprise in the public sector, irrespective of the size and nature of business. *Treasurers* are the professionals responsible for the management of money within an organization. They are usually a company's finance personnel such as:

- financial consultants,
- treasury managers in treasury departments of corporates,
- cash managers in finance department of corporates,
- heads of finance or treasury departments of companies,
- finance/treasury directors,
- chief financial officers, and
- risk controllers and other staff members of the treasury and finance departments.

The bankers, advisors, administrators and service providers operating in cash, treasury and risk management market are also regarded as treasurers.

It is clear from the definition of treasury management that it performs a bundle of functions which have undergone a transformation due to globalization and technological advancements as narrated below.

(i) *Cash management services provided by banks*: Globalization and technological advancements have broadened the cash management services offered by banks from transaction processing, reconciliation, clearing services and account balance reporting for local customers to include services such as electronic funds transfer, lockbox collection services, bulk payments as well as cash pooling and netting on a cross-border basis, and local and international account balance reconciliation and reporting.

(ii) *Liquidity management, liquidity forecasting and its optimization:* Globalization has necessitated a proper exchange of information on cash flows between different internal and external parties related to the business and estimation of future cash requirements for effective liquidity management.

(iii) *Working capital management:* A proper estimation of the working capital needs of the business, an effective management of collection of receivables, efficient concentration of cash and controlled disbursement on payable accounts, and funding of both payable and receivable accounts are the key challenges before a global treasurer to ensure smooth running of the business.

(iv) *Fund management*: As deregulation and globalization of world economies have opened up alternative financial markets and have enabled the business houses to raise capital from a wide variety of money market and capital market instruments than were available before, the tasks of a treasury manager in deciding about the right mix of internal and external financing by way of optimizing the cost of fund procurement have become more complicated today.

(v) *Investment management:* Apart from maximising the returns from investment operations, ensuring the safety and maintaining the liquidity of the funds invested in domestic or foreign securities have become the main objectives of a global treasurer as investment manager of the company.

(vi) *Risk management:* With growth, technological innovations and acceleration of global trade comes increased risk in the form of business risk, financial risk, interest rate fluctuation risk, foreign exchange rate fluctuations, risk and regulatory and political risks. This has complicated the job of today's treasurer in effectively managing these different kinds of risks.

Thus as globalization, deregulation and technological developments have widened the scope of treasury management services, treasurers have several different objectives to fulfil in order to ensure the well-being of an organization in today's highly competitive environment. Such objectives have been addressed in the next section.

## 3. OBJECTIVES OF TREASURY MANAGEMENT

Effective treasury management addresses the priorities of an organization for sustainable growth, liquidity, investment return and risk controls. But the precise nature of contribution of treasury management will depend largely on the type of organization concerned, statutory and regulatory regimes under which it operates and the scope, complexity and objectives of its treasury management function. As for example, treasury management activities of a commercial organization aim at contributing towards the organization's profit or surplus within an appropriate risk exposure criteria. On the other hand, treasury management of an organization in public services focuses largely on the effective control of risk. Whatever may be the nature of the organization, the achievement of optimum performance consistent with the risk exposure criteria in order to help the organization meet its operational, financial and strategic goals is the primary objective of treasury management. In view of this overall objective, function-wise specific objectives may be as shown in the box diagram of Figure 1.

Figure 1
**Specific Objectives of Treasury Management**

| Cash Management (by banks) | Liquidity Management, Liquidity Forecasting and Optimisation |
|---|---|
| • Make sufficient funds, in appropriate currencies, available with the organization; | • develop a bank account and liquidity management strategy that maximises the returns to the business; |
| • facilitate lockbox collections, both domestic (i.e., a two-tier process enabling fund transfer from bankers of subsidiaries across a country to the master account of the parent company) and cross-border (i.e., a three-tier process involving fund transfer from subsidiaries in various countries to domicile country of parent company and then to designated location in parent company's domicile country) cash pooling, sweeping (i.e., zero balancing) and netting; | • select the specific types of cash management services provided by banks to reduce operating costs;<br>• exercise effective control over how and when cash moves out of business;<br>• maintain enough liquidity to meet daily expenditure requirements and still take advantage of immediate opportunities;<br>• estimate future cash requirements;<br>• reduce or eliminate unnecessary debt; |
| • devise electronic funds transfer strategies to facilitate speedier and safer transactions and promote a chequeless society; | • develop a flexible approach towards meeting solvency requirements and in managing deposits; |
| • enable local and international account balance reconciliation and reporting. | • access up-to-the-minute information on cash flows so that some form of contingent liquidity measures may be undertaken to avoid illiquid situation; |
|  | • economise on the use of banking facilities and turn idle cash into a valuable resource by redeploying it elsewhere thereby earning additional return or reducing borrowing costs. |

*Figure 1 (contd...)*

| Working Capital Management | Risk Management |
|---|---|
| • offer user-friendly and convenient payment solutions to customers; | • classify and analyse various sources of business risk, financial risk, interest rate and foreign exchange rate fluctuation risks, regulatory and political risks; |
| • make the collection services cost-efficient and convenient; | • measure the above risks and devise strategies to mitigate such risks; |
| • reduce the invoice-to-cash cycle and hence speed up access to cash and reduce the chances of fraud as well; | • establish an arrangement for risk controls among operating entities; |
| • control the flow of disbursements and regulate payment cycles; | • manage currency risks related to foreign investments. |
| • eliminate delays in obtaining vital balance and transaction information. | |

An examination of the above-mentioned objectives would suggest that the implications of *ineffective* treasury management range from opportunity cost in the form of loss of earnings on cash surpluses to potentially substantial losses through poor management controls within the organization. This may eventually erode the stakeholders' (i.e., investors, depositors, customers etc.) confidence in the organization and hence expose the organization to serious financial and reputational losses. Thus, the outcome of ineffective treasury management may be extremely damaging not only to the organization itself, but also to the professional reputation of treasurers who are entrusted with the responsibility of treasury management.

## 4. TECHNOLOGICAL CHANGES IN APPLICATIONS OF TREASURY MANAGEMENT

The use of technology in treasury management clearly differentiates a successful organisation from the less successful ones today. As globalisation of business has necessitated centralisation of treasury management functions, standards-based integration of information and activities, and implementation of universally accepted interfaces and distributed intelligent systems between the parent company and its subsidiaries, the new techniques, tools and software that have emerged in the field of treasury management to respond to the above-mentioned challenges are explained below.

The technological revolution has led to streamlining of *accounts payable and receivable systems* in an organization. A centralised receivables and payables management system is developed through a high-bandwidth network that links the parent companies to their subsidiaries and banks across many countries and time zones. As a result, the progress of collections by subsidiaries and their payables' position are monitored by the parent company via an enterprise resource planning (ERP) system and collections made by the subsidiaries are pooled to the parent offices' accounts without much delay through inter-bank transfer. In order to send payment instructions of multiple payment types across multiple countries, and to receive balance and transaction reporting information of subsidiaries in different countries, an in-house web-enabled front-end banking platform linking the company's back-office system with the bank is developed. This facilitates host-to-host interface between the company's banking platform and the bank's host computer. An emerging alternative to business-to-business (B2B) transactions for regulating the payment cycles is the adoption of electronic bill presentment and payment (EBPP) technology. In this methodology, businesses can authorise their banks to make payments online thereby saving transaction costs and eliminating postal delays or losses.

As regards *working capital management,* web technologies, electronic commerce and ERP systems have integrated the overall process of cash flows from placing orders for material purchases to reconciliation of working capital balances between the parent and its subsidiaries. The implementation of the ERP system creates an integrated supply chain between the suppliers' and the company's business processes while the integration of disparate systems in different geographical locations is managed through the web. By combining ERP and web, invoice-handling process is streamlined. Further, if invoicing is done electronically, the delay in actual payments can be reduced substantially. Thus, by combining ERP, web and electronic commerce technologies, information is available instantaneously and the capital attached to working capital is released instantly.

Apart from centralising the payables/receivables systems and streamlining working capital management activities spread across the world, *liquidity management* involves establishing cash pool structures and netting schemes, and creating an internal bank in order to facilitate centralisation of liquidity management function. This requires consolidation of forecasts and information on daily balances and operations of subsidiaries dispersed geographically and the ability to execute fund transfers from a focal point, through an ERP system. In non-network companies, the business units can upload the liquidity forecasts only in spreadsheets or through e-mail. Some firms also use systems that consolidate historical information from payroll, accounts payable and receivable, and other financial systems and work with banks to integrate balance information in order to make a better forecast of business liquidity. These systems can be hooked into a corporate intranet in order to provide a web-based report generation system so that the firm is able to optimize liquidity by making short-term funding and investment decisions. It may be noted that intra-day balance information from many banks is available on proprietary interfaces specific to the core banking system while end-of-day balances can be accessed through standardized interfaces such as SWIFT (i.e., Society for Worldwide Inter-bank Financial Telecommunication) network.

It is clear from the above discussions that the success of payables and receivables management, working capital management and hence liquidity management depend upon the effectiveness of *cash management* solutions offered by banks. Prior to the emergence of the concept of globalization, cash management services provided by banks focused primarily on deposit-taking activities and on insular forms of banking such as trade finance and remittances. As a result, the services offered to corporates were fragmented rather than connected. Moreover, the manual, unconnected clearing system resulted in inefficiencies in the system. With businesses expanding globally, companies have started tightening their liquidity position by way of reduction of operational cost and time reduction and efficient utilization of funds. The banks have begun helping the companies to meet these objectives by providing both in-country and cross-border cash management solutions rolled into one integrated formula. The primary motive behind working with a bank that has the capability to interface with the company's own financial system is to re-engineer or integrate the company's cross border operations with its domestic operations. Resultantly, multi-branch connectivity facilitating inter-bank payments and settlements, real-time and on-line transfer of funds between group companies and different financial markets, fair and equal access to all financial intermediaries, and cross-border, cross-currency sweeping, netting and global pooling across the entire group of companies has been developed. Domestic and cross-border cash pooling or concentration and sweeping are done by availing multi-bank zero-balancing services offered through multi-bank online network i.e., Automated Answer Network System for Electronic Requests (ANSER). ANSER has also facilitated automatic verification and notification of cash transactions and netting of both domestic and cross-border, cross-currency transactions. The above-mentioned cash management solutions offered by banks today require free flow of information between group companies and the banks. Accordingly, XML (extensible markup language) is being extensively used today as the basis for standardisation as it enables all inward and outward communication and the creation of a hub for all cash management activities of an organization. Besides, technology has also enabled banks to introduce efficient products into the cash management arena with a view to increasing operational efficiency, reducing cost, speeding up transactions and hence creating a competitive edge in the market place. These products include use of IRDs (i.e., image replacement documents) as substitutes for cheques, radio frequency identification (RFID) technology to eliminate physical loss of debit/credit cards at the point of sale, magnetic ink character recognition (MICR) based mechanised cheque processing technology such as "reader sorters", lockbox collection services, automated notes counting equipment, ACH (i.e., automatic clearing house) point-of-purchase transfer of funds between buyers' and merchant's accounts, electronic clearing services (ECS), same day clearing or T+2 (i.e., transaction + 2 days) or T+3 (i.e., transaction + 3 days) settlement, real time gross settlement (RTGS) and the like.

As regards *investment management*, the treasury management solution provides the organization with a sophisticated, multi-entity, multi-portfolio, multi-dealing room environment supported by robust risk management and back office management tools, and management information system (MIS), exhaustive pre- and post-trade support tools and analytics, and real time feed integration from multiple service providers for choice of instruments/currencies.

Finally, in order to *measure, monitor and mitigate risks of losses* resulting from inadequate or failed internal processes, people and systems or from external events, solutions such as operational risk incident capture system (ORICS) with a robust data warehouse and intelligent business tools to build a repository of historic risk events comprising loss events, near misses, gains and reputational risk events, use of imaging technology to prevent fraud in repetitive data entry processes, straight-through processing (STP) enabling automated cheque processing and reducing the number of handoffs between various entities within a bank and between banks before a cheque is cleared etc., are implemented.

Thus, the above discussions suggest that not only deregulation and globalization, but also the rapid development of associated technical infrastructures have revolutionized the treasury management functions in an organisation.

## 5. ROLE OF TREASURERS IN GLOBALIZED AND DIGITIZED ENVIRONMENT

With technological advancements, increasing budgetary spending and expansion of businesses to new territories, the issues of managing global opportunities and creating efficient financial structures for global operations and hence developing effective treasury management solutions have become more relevant, if not acute, today. In this context, the challenge for the treasurers lies in developing the right treasury management solutions to support the growth of business. Thus, the primary role of treasury managers is to acquire a new body of knowledge and skills for effectively managing the treasury of a business in this new era of liberalization, globalization and web-enabled operating environment. More specifically, the roles of treasurers in today's organizations are as follows.

(i) Within the framework of responsibilities placed upon them, treasurers must be competent and equipped with the required knowledge, skills and training that are necessary to fulfil their specific treasury management roles and responsibilities so that the organization is able to carry out its own treasury management policies and objectives and achieve its wider business and service goals.

(ii) Treasurers must be conversant with both evolutionary trends (such as issues arising out of globalization and introduction of new treasury management technologies) and revolutionary trends (i.e., emerging legal and regulatory issues) affecting the treasury management activities of their employing organization.

(iii) Treasurers must have a highly focused knowledge of capital markets, money markets and various instruments, investment avenues and techniques available to their employing organization for the purpose of achieving high standards of treasury management performance. They must also understand the inter-linkages between money and capital markets and the practical implications of these linkages.

(iv) The professionals responsible for treasury management must keep abreast of developments in money and capital markets by having access to real-time price data, comprehensive treasury market news, analytical information provided by media, credit rating agencies, research analysts etc. and announcements made by experts on various economic and policy issues. If the treasurers deal directly in the financial markets as part of their treasury management role, then they must also have access to sophisticated analytical tools and electronic trading systems.

(v) Corporate treasurers must select the appropriate cash management solutions provided by the organization's bankers in order to integrate the banks' products with the organization's treasury management system, ERP and other vital applications such as cash flow forecasting and hence, for the said purpose, the treasurers must become aware of all issues relating to the said banks.

(vi) Treasurers must closely scrutinize the organization's liquidity position, review its risk management strategies, analyse the people, processes, systems and external factors related to the organisation and hence determine the key risk indicators in order to devise systems, technology and tools for measuring and managing risks in business.

(vii) Finally, treasurers must possess the necessary mathematical aptitude and computer skills to discharge their treasury management functions effectively.

Thus, it is clear from the above discussions that the effectiveness of treasury management will depend upon the extent to which treasurers are able to carry out the above-mentioned roles in the organization.

## 6. CONCLUSIONS

In the light of discussions made in this article it may be said that effective treasury management must integrate human capital, knowledge, technology and speed for organizations to survive the transformation to the digital economy. Treasury management needs to do away with structural rigidities, bring in operational flexibility and transparency, and connect domestic and global operations so that today's business houses, having a 'multi-national status', can make the most of available opportunities while minimising the risks. The pre-requisites for successful treasury management are, however, an appropriate regulatory framework, implementation of user-friendly enterprise – application software to facilitate free flow of information within an organization, and between it and its banks, customers and suppliers, availability of right kind of banking products and solutions, installation of tailor-made treasury management technology from concept to design to implementation with a view to addressing the diversity in languages, tax and regulatory issues, and clearing and collection systems prevalent across countries, and execution of a training programme to equip the treasurers with the necessary tools, knowledge and skills.

Thus, for businesses operating in multiple states and territories, the need of the hour is to have a connected infrastructure facilitating vibrant parent-to-subsidiaries linkages and customized treasury management solutions ranging from collection and disbursement services, and cash and risk management to online information reporting and control in order to stay ahead of competitors in today's digital economy. And, this can be achieved only when the organization views treasury management as a value added support area and not just a cost centre.

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# Global Compatibility of Indian GAAP

**Dipti Kumar Chakravorty***

## Abstract

Global compatibility of national GAAPs has become a necessity today, not a matter of choice. Almost all the countries of the globe have understood this stark reality, and hence, have started to redesign their "own" GAAP in favour of convergence with global accounting standards. India, for obvious reason, has also followed suit, giving up her earlier stand of maintaining some difference. An attempt has been made in this paper to evaluate her achievement to that end.

*Key words* : Tsunami of Globalisation; Convergence; Unstoppable Reality; Confines of Local Consideration; Comprehensive Income; Political Lobbying.

## 1. INTRODUCTION

"The dream of international standards for accounting, auditing and reporting had been with accountants for a long time" (Muller & Walker 1976). In the first International Congress of Accountants held in 1904, an effort was seen in the matter. But as there was fear that "individual states cannot be expected to forego their legislative power in the interest of international uniformity" (Samuels & Piper, 1985), accounts until very recently were "embedded in national legal structures which are based upon local, political and economic conditions and upon cultures" (Damant, 1987). Even when we were under British Rule, we started to develop an accounting framework exclusively for our own, which culminated in the year 1857 when the Indian Companies Act for the first time incorporated the provisions for preparation and presentation of balance sheet. Since then, particularly since we achieved independence in the year 1947, an all-round attempt was initiated, both at the governmental and the professional level, to develop the generally accepted accounting principles (GAAP) for India (For details see Banerjee, 2002a). In this attempt, always we tried to give priority to our local conditions while incorporating a particular principle in the accounting framework for our country. We followed the British Companies Act at the time of providing a legal framework to accounting, but not word by word. We used the standards issued by the International Accounting Standards Committee (IASC), now known as the International Accounting Standards Board (IASB), as a base for our standard-setting. But like our neighbouring country Pakistan, we did not accept them in toto as our own. Since the early 1980s, however, the scenario has been radically changed. The tsunami of globalisation has indeed struck at the very root of the old concept of "own" standards or national GAAP, which led the globe initially towards an international harmonisation of national GAAPs, and now it has entered into the next generation move, i.e., convergence. India, for obvious reason, has also to follow suit, giving up its earlier stand of maintaining uniqueness. But still, one section of accounting writers feel that the concept of convergence is a utopian move and in practice, the financial accounting practices across the countries must vary due to country-wise differences in legal system, pattern of financing, tax laws, level of economic development of accountancy profession and also in culture. In view of this, the present paper will attempt to see how far the global compatibility is essential or possible at least in our case. An analysis will be made in this connection as to the present position of Indian GAAP vis-a-vis global standards. How the position can be improved further, will be delved into at the end.

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## 2. GLOBAL COMPATIBILITY — A NECESSITY

Need for global compatibility of national accounting principles has been well-recognised in the mean time. In the age of globalisation when the corporations are becoming more and more international, a more uniform approach to accounting policies and practices would surely make a sense. The importance of relevant and reliable financial information and its contribution to the free flow of goods and capital in the world trade, cannot be overstated. For this reason, "if accounting standards are needed nationally, they are even more sorely needed internationally" (Chandra, 1999). Until the 1970s when the economy was not so global, the world had followed a rather micro-model of developing accounting principles : each country of its own. It was also believed then that in necessity, the financial statements prepared under standards of one country could be adapted to the standards of another country by reconciling the difference easily. But with the growth in size and complexities of business, the difference in national accounting standards have only mush-roomed (Street, 2003), making reconciliation a tough task. Every country has also recognised that cost of developing accounting standards collectively would be lower, and standards with bigger jurisdiction would be easier to enforce. There would be economies of scale and the developing nations with little or no experience in formulating standards would also be able to participate in the process (Chandra, 2003). Above all is the challenge of globalisation which is now an irreversible, an unstoppable reality. We have to live with it and learn to manage it so that we can take advantages of its opportunities. Globalisation has opened up the national borders for cross-border flow of capital. But due to inter-country differences in GAAP, the companies are failing considerably to make hay out of it. The State Bank of India in 1999, the Wipro in 2000 had to prepare separate set of accounts to get themselves enlisted in New York Stock Exchange (NYSE). In this age of international mobility of capital, it is very likely that the companies will enlist the shares in the stock exchanges of different countries at a time. How much will be the wastage of money and energy then to prepare different sets of accounts, we can easily imagine. Not only the preparation of such different sets of accounts, but to keep inventory of all of them is also very costly and cumbersome. Secondly, we all know that the cross border mergers and acquisitions have now been a very effective way to reap competitive advantage at the international level. But as the published financial information is not comparable internationally, the bidders have to experience problems in assessing dependably the purchase consideration. We all know that Daimler Benz of Germany and Chrysler of US merged together in 1998 to form Diamler-Chrysler. But the German GAAP was so different then that the reported net profit of Diamler Benz turned into a loss being reconciled as per US GAAP. In brief, the parties who are being largely affected in the absence of Global Accounting Standards (GAS) are the following (Basu, 2000) :

- Companies that seek access to foreign capital markets.
- Investors seeking global investment portfolio
- Stock market regulators dealing with foreign issues
- Companies involved in international mergers and acquisitions
- Companies having subsidiaries in different countries.

The list of such beneficiaries is increasing by leaps and bounds day by day. In recent years there has been such a phenomenal increase in cross-border trading that practically "the securities are priced to-day according to international rather than domestic factors" (Nobes and Parker, 1998). So, the message is that a common language in accounting is irresistible. In view of this, the US, which was earlier very much sceptical and critical about the idea of international standards, has also now started looking onward. It has still some reservations as to the organisational arrangement and the way of functioning of IASB, but in principle it agrees that the GAS is a necessity, and in the present circumstances the development of GAS is possible only through the convergence of national accounting standards. For obvious reason, India cannot keep her eyes shut to what is happening in other parts of the world. For a decade or more she has been trying sincerely to outgrow from the confines of local considerations as to accounting and reporting. The achievement in the process is cited in the next section.

## 3. INDIAN GAAP VIS-A-VIS GLOBAL STANDARDS

Indian GAAP consists mainly of two elements : (i) the legal framework provided by the Indian Companies Act, 1956 as amended upto date, and (ii) the accounting standards (ASs) issued by the Accounting Standards Board (ASB) of India. It is well known to all that our legal framework has been designed by following the British Common Law, and as such, unlike in case of Roman Law, it gives a minimum outline of accounting and reporting requirements, and does not prescribe detailed and all-embracing rules to cover the behaviour of companies including accounting and reporting matters (Banerjee, 2002a). To overcome this limitation, the Government of India (GOI) has delegated a part of its power to professional bodies for taking decisions on accounting matters in a more objective and specific way (Chakravorty, 1994). Since 1998, the role of professional bodies, particularly of ASB has been increased further whence the Companies Act itself requires that "every profit and loss account and balance sheet of the company shall comply with accounting standards." As a result, the ASs have become virtually synonymous now with 'GAAP' of India. The role of the Companies Act, on the other hand, has been limited mainly to providing penal measures for non-compliance of GAAP, and prescribing the formats for financial statements. Let us see first how far such formats are compatible to global practices, particularly to practices of UK and USA.

### 3.1 Presentation of Financial Statements

In India there is no prescribed format for profit and loss account, though for balance sheet, two formats (one vertical and other horizontal) have been suggested by the Indian Companies Act. In UK also there are two prescribed formats for balance sheet. But its vertical format, which is mostly used in UK, is a more detailed one in comparison to that of India (Table 1). In respect of profit and loss account, no less than four alternative formats are given in UK, two vertical and two horizontal. One of the vertical forms, that is used usually by UK firms, is reproduced in Table 2. The rules for operating the formats are precisely stated in Schedule 4 to the British Companies Act, 1985. There it is clearly required that the exact sequence and the exact wording of every item of the selected format must be used. In India, on the other hand, the preparers of accounts enjoy some laxity relating to the formats of financial statements, as the law here allows the preparation of accounts in a format which may be as near to the suggested format as circumstances permit. But in all other aspects of corporate reporting, the provisions of Indian Companies Act are indeed the verbatim translation of their British counterpart (Alexander & Britton, 1996). In addition, however, the UK Accounting Standards Board in its Financial Reporting Standard (FRS) 3, has introduced the concept of Statement of Total Recognised Gains & Losses (STRG&L). In our country, we are yet to have a provision as such.

The US corporations also follow generally the vertical formats in accordance with the guidelines given in the Statements of Financial Accounting Standards (SFASs). The format for Income Statement there is highly informative for understanding and decision making. The companies there invariably mention the Earning Per Share (EPS) at the end of Income Statement (Table 3). The statement of Comprehensive Income, which is prepared there in addition to income statement as per SFAS 130, is more or less similar to STRG & L of UK. The Balance Sheets of the USA start with current assets; and after some steps of additions and deductions, they finally reach the figures of equity (Table 4). In India, on the other hand, the vertical format of Balance Sheet starts with sharehonders' fund. "Net current assets" is shown rather at the very end (Table 5). Barring these few differences, the financial statements of USA are more or less identical to those of our country (See Griffin, 1984). UK and USA are two pioneer countries in the development of accounting and reporting. Our reporting format being more or less similar to that of those countries, we may be assured about the global compatibility of it.

The requirements for presentation of financial statements are also given in International Accounting Standards (IAS) 1. Two lists are given there showing the minimum information required in the face of income statement and balance sheet respectively (Greuning, 2004). Our reporting requirements as stated in Part-I and II of Schedule-VI annexed to the Indian Companies Act, 1956 are mostly identical to the global requirements as such. The only uniqueness that we can see in IAS 1 is the inclusion of 'biological assets' and the 'assets and liabilities in disposal groups held for sale' in the balance sheet, and 'discontinued operations' in income statement. This undoubtedly asserts further the global compatibility of Indian reporting practices.

### 3.2 Recognition and Measurement of Accounting Events

Inter-country diversity as to presentation of financial statements is not of so much concern, as this can easily be reconciled by the users. But when differences arise in recognition and measurement of financial events, reconciliation may be difficult to make. So, the compatibility is essential mainly in the latter case to smoothen the process of globalisation. For the purpose, IASB has been given the formal authority to strive for global convergence, and national standards are being designed to fall in line with IFRSs (International Financial Accounting Standards), which were earlier known as IASs (International Accounting Standards). Some countries, from the very beginning, have accepted IASs or IFRSs as their national standards. So, convergence there is automatic. But in India, the strategy is to use IASs as the base for standard setting, not to copy them word-by-word. Hence, some differences are very likely there between IASs and ASs. Moreover, in the mean time, a number of revisions and improvements have been made in IASs under the Comparability / Improvement Project of IASB. In view of all these, the differences that we notice now between IASs and ASs are not at all few and far between. The areas in which mainly the differences lie, may be pointed out in brief as below (Chatterjee, 2005).

- In some cases like accounting for Leases, Earnings per Share, Consolidated Financial Statements etc., the Indian standards require more disclosure than IASs.
- IASs require more disclosure in cases like Valuation of Inventories, Cash Flow Statements, Related Party Disclosures, Discontinuing Operations, Interim Financial Reporting etc.
- In some cases, ASs are more specific than corresponding IASs, such as, IAS 24 on Related Party Disclosure does not specify any percentage to explain 'substantial interest', while AS 18 provides in this respect a threshold of 20 per cent voting power.
- In some cases, while IASs allow alternative treatments, ASs allow only one treatment. For example, in IAS 28 both the Cost and Equity methods are allowed for Accounting for Investments, whereas in AS 23 only the Equity method is recommended.

This may be the reason for which we see in GAAP Convergence Report, 2001 that the difference between the IASs and national GAAP are maximum in case of India than in case of any other country in Asia (Table–5). The GAAP Convergence Report, 2002, however, reveals that an ongoing process is aimed at bringing Indian standards in line with IFRSs and the old standards are being revised to make them at par. Hence, a recent study (Iyer, 2002) reveals that although differences lie in detail between IFRSs and ASs, the requirements are similar in substance. That almost all the countries of the world are moving in the same direction, is evident from the study of the Annual Report of Infosys for the year 2004–05. In addition to the financial statement prepared under Indian GAAP, Infosys in 2004–05 has prepared financial statements in substantial compliance with GAAP requirements of

Australia, Canada, France, Germany, Japan and United Kingdom. But what we notice there is that the difference in reported profit in each case is only marginal. From this, it may be deduced that the Indian GAAP is coming closer day by day to IFRSs, though from the viewpoint of US GAAP we are still to go a long way. US capital market today is the most effective capital market in the globe. So, we must have an urge to make our Country's GAAP compatible with US GAAP, as most of our companies and investors are eager to take advantage of US capital market. But as formally we are to be compatible with IFRSs, and IFRSs themselves are different in many aspects from US GAAP (Table–6), we have virtually a little to do in this respect. In the meantime, however, there have been a number of developments in both USA and IASB, as a result of which the gap between US and Indian GAAP has also been lessened. The financial statement of Satyam Computer prepared under US GAAP showed a negative result in 2001, and the same prepared under Indian GAAP depicted a profit (Kumar & Kulshertha, 2004); whereas in 2005, the reported profits under US and Indian GAAP were 153 million dollars and rupees 7116 million respectively which, being converted into same currency, are not so different from each other. This indicates, how gradually we are entering into the age of GAS. But for complete convergence we are to wait till the completion of convergence projects adopted jointly by FASB and IASB. Then of course, we may be required to revise our ASs further; as for the sake of convergence with US GAAP, the IASB has decided tentatively to amend some of its IASs again.

## 4. CONCLUSION

That GAS is the need of the day, is accepted by one and all. It is also being increasingly recognised that an independent body like IASB should be authorised to play a dominant role in this respect. At the same time US has sufficient ground to question the world-wide applicability of IASs, since on the one hand, IASs are not upto the mark in many cases, and the US, on the other hand, has developed over the decades a well-organised and strong structure for accounting and reporting. The IASB, in collaboration with IOSCO, has brought in some improvements at least in thirty IASs. But it has still to do a lot. The US also cannot boast any more of its own GAAP, after particularly the collapse of a number of high profile corporations and accounting firms in that country. The Memorandum of Understanding (MOU) that FASB and IASB have signed, and the Convergence Projects that they jointly have adopted are no doubt a right step in that background. How their joint effort can give a compatible result is evident from the case of Earnings Per Share (Banerjee, 2002b). Other than USA, seven other countries are now working in liaison with IASB. The International Federation of Accountants (IFAC) has been working jointly with International Forum an Accountancy Development (IFAD) in country-by-country reviews of accounting standards. But it is apprehended that the political lobbying may emerge in different degrees to impede the effort of achieving convergence in true sense. Already in some corners such lobbying has started to surface (Zeff, 2002). IASB is to play the key role here. Notwithstanding pressures from any corner, it must not retreat from its desired role in formulating / achieving high quality global accounting standards.

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## APPENDIX

### Table 1

### Format for Balance Sheet in U.K.

A. Called up Share Capital not paid
B. Fixed Assets
  I. Intangible assets
  II. Tangible assets
  III. Investments
C. Current assets
  I. Stocks
  II. Debtors.
  III. Investments
  IV. Cash at bank and in hand
D. Prepayments and accrued income
E. Creditors : amounts falling due within one year
F. Net current assets (liabilities)
G. Total assets less current liabilities
H. Creditors : amounts falling due after more than one year
I. Provisions for liabilities and charges
J. Accruals and deferred income
K. Capital and reserves
  I. Called up share capital
  II. Share Premium account
  III. Revaluation reserve
  IV. Other resources
  V. Profit and loss account

A total would normally be made of items A to J inclusive, balancing with item K.

### Table 2

### Format for Profit and Loss Account in U.K.

1. Turnover
2. Cost of Sales
3. Gross Profit or Loss
4. Distribution costs
5. Administrative expenses
6. Other operating income
7. Income from shares in group undertakings
8. Income from participating interests
9. Income from other fixed asset investments
10. Other interest receivable and similar income
11. Amounts written off investments
12. Interest payable and similar charges
13. Tax on profit or loss on ordinary activities
14. Profit or loss on ordinary activities after taxation
15. Extraordinary income

16. Extraordinary charges
17. Extraordinary profit or loss
18. Tax on extraordinary profit or loss
19. Other taxes not shown under the above items
20. Profit or loss for the financial year.

### Table 3
### Format for US Income Statement

| | |
|---|---|
| Revenues : | |
| Sales | * * * |
| Interest & Others | * * * |
| Total Revenue | * * * |
| Cost and Expenses : | |
| Cost of Sales | * * * |
| Selling Expenses | * * * |
| Interest etc. | * * * |
| Earnings before Tax | * * * |
| Income Tax : | |
| State & Local Tax | * * * |
| Federal & Foreign Tax | * * * |
| Net Earnings | * * * |
| Net Earning per share | * * * |

### Table 4
### Format for Balance Sheet in US

| | |
|---|---|
| Current Assets : | |
| Cash & Short-term Securities | * * |
| Receivables | * * |
| Inventories | * * |
| Prepaid Expenses | * * |
| Total Current Assets | * * * |
| Current Liabilities : | |
| Notes Payable | * * |
| Accounts Payable | * * |
| Accrued Liabilities | * * |
| Current Portion of Long-term Debt | * * |
| Total Current Liabilities | * * * |
| **Working Capital** | * * * |
| Investment | * * * |
| Property, Plant etc. | * * * |
| **Total Assets less Current Liabilities** | * * * |
| Less Non-current Liabilities | |
| Long-term Debt | * * |
| Preferred Stock | * * |
| Other Non-current Liabilities | * * |
| **Common Stock & Other Shareholders' Equity** | * * * |

## Table 5
## Vertical Format for Indian Balance Sheet

| | | |
|---|---|---|
| **I. Sources of funds** | | |
| (1) Shareholders' funds | * * | |
| (2) Loan funds | * * | |
| Total | | * * |
| **II. Application of funds** | | |
| (1) Fixed Assets | | * * |
| (2) Investments | | * * |
| (3) Current Assets | * * | |
| Less | | |
| Current Liabilities | * * | |
| Net Current Assets | | * * |
| (4) Misc. Exp. & P/L Account | | * * |
| | | * * |

## Table 6
## Differences between IASs and National GAAPs in Asia

| Country | Number of differences as on 31.12.01 |
|---|---|
| India | 28 |
| Japan | 26 |
| Malayasia | 26 |
| China | 24 |
| Philippines | 24 |
| Taiwan | 23 |
| Pakistan | 17 |
| Thailand | 16 |
| Singapore | 14 |
| Hongkong | 14 |
| Indonesia | 14 |
| South Korea | 14 |

Table 7

### Major Differences between IFRSs and US GAAP

| Topic / IAS No. in bracket | Requirements of IFRSs (IASs) | Requirements of US GAAP |
|---|---|---|
| 1. Method for determining Inventory Cost (2) | LIFO Prohibited | LIFO Permitted |
| 2. Reversal of Inventory write down (2) | Generally required | Prohibited |
| 3. Inclusion of costs of idle capacity & spoilage in inventory (2) | Not permitted | Permitted |
| 4. Construction Contract (11) | Cost recovery method | Completed contract method |
| 5. Property, Plant & Equipment (16) | Revalued amount or historical cost | Generally historical cost |
| 6. Inspection or overhaul cost (16) | Part of cost of asset | Expense |
| 7. Translation of Foreign Currency (21) | Current or historical exchange rate | Current rate |
| 8. Treatment of exchange differences for non-monetary items (21) | Included in equity | Taken to income statement |
| 9. Measurement of Impairment Loss (36) | Based on recoverable amount | Based on fair value |
| 10. Reversal of Impairment Loss (36) | Generally required | Prohibited |
| 11. Development Cost (38) | Generally capitalised | Expenses except in case of wedsite development |
| 12. Investment Property (40) | Historical cost or fair value | Historical cost |
| 13. Agricultural Crop (41) | Fair value | Generally historical cost |

# Revision of AS 15 on Employee Benefits – A Step towards Better Compatibility of Corporate Financial Reporting

**Satyajit Dhar***

## Abstract

In its effort to bring standards that are compatible with the IASB pronouncements, the ICAI has revised accounting standard on retirement benefits. In this context, this paper examines the issue of compatibility of the revised standards with its global counterparts. It finds that in certain areas Indian standard setting body has adopted treatments that differ from that of IFRS. The paper ends with an optimistic note that adapting the IFRS through integrating them into Indian standards would enhance the comparability of financial information.

***Key words*** : Employee benefits; Convergence; Compatibility; Defined benefit; Actuarial Valuation; Actuarial Gains and Losses.

## 1. INTRODUCTION

The Accounting Standard Board (ASB) of the Institute of Chartered Accountants of India (ICAI) has recently revised the Accounting Standard (AS) 15 on 'Retirement Benefits' to enlarge the scope of the standard so that it may address all major accounting issues relating to employee benefits (ICAI, 2006). The standard is made mandatory from the accounting period commencing on or after April 1, 2006(ICAI, 2006). The revision is an outcome of the ICAI's conscious effort to bring the Indian accounting standards at par with the International Financial Reporting Standards (IFRSs) by revising the existing accounting standards and issuing new standards corresponding to IFRSs. More broadly, IFRSs refers to the entire body of International Accounting Standards Board (IASB) pronouncements, including standards and interpretations approved by the IASB and International Accounting Standards (IASs) and interpretations approved by the predecessor International Accounting Standards Committee. In the world of emergence of transnational corporation and globalization, convergence of accounting standards is the centerpiece of the efforts to build a global financial reporting infrastructure and it has been duly recognized as the future of global accounting standards.

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Development of compatible standards will promote convergence. Accordingly, this paper attempts to address the following issue:

Does issuance of revised standard on employee benefits by the ASB of the ICAI lead to development of compatible standards?

The article describes the issue of compatibility in the context of revision of AS 15. Section two gives a brief overview of recent steps that have been taken to promote compatibility of accounting standards in Indian context. Section three deals with background of the revision of AS 15 and implication of the revised standard on financial reporting. In the next section, it is explored how far the revised standard is compatible with global standards. Accordingly, a comparative study of the various standards [AS 15, IAS 19, the UK standard, Financial Reporting Standards (FRS) 17 and the US standards, Statement of Financial Accounting Standards (SFAS) 87, 88 and 106] is presented to focus on similarities and dissimilarities. In the penultimate section the controversial issue of recognition of actuarial gains or losses has been considered. The last section gives concluding observations.

## 2. COMPATIBILITY OF FINANCIAL REPORTING

Compatibility is the main theme around which the convergence issue tends to revolve. Global convergence of accounting standards pre-supposes the development of high-quality compatible accounting standards that could be used for both domestic and cross-border financial reporting. Although, the process of harmonization of accounting as a process of bringing some sort of order in the accounting practices among the countries (Basu, 1995) was started much earlier through promulgation of transnational legislation by the commission of European Communities, it gathers momentum in recent years through adoption of IFRSs by the countries in Europe from 2005. Further, the Financial Accounting Standards Board (FASB)- the USA's principal financial reporting rule making body has been working very closely with the International Accounting Standard Board (IASB) to eliminate differences among generally accepted accounting principles (GAAP) followed in the United States and IFRSs. The memorandum of understanding (MOU) between FASB and IASB in October 2002, known as the "Norwalk Agreement" is a step towards formalizing the commitment of two bodies to the development of high-quality compatible accounting standards. Through the agreement, both the FASB and the IASB pledged to use their best efforts to (a) make their existing financial reporting standards fully compatible as soon as practicable and (b) to coordinate their future work programmes to ensure that once achieved compatibility is maintained.

In India, the Accounting Standards Board of the ICAI, the body entrusted with the task of the formulation of accounting standards, considers the IFRSs and tries to integrate them with Indian standards, to the extent possible, in the light of the laws, customs, practices and business environment prevailing in India. However, standards formulated up to late-nineties (i.e., AS 1 to AS 15) have more divergence and the recently promulgated standards are almost at par with IFRSs. Issuance of standards gathers pace from 2000 and the ICAI has issued 14 standards during 2000 to 2004. These standards are frequently referred to as " new accounting standards" and they tended to follow the IASB promulgation more closely than the previous generation of standards (Narayanswamy, 2006, p.970). ICAI is now revising its earlier standards to make them compatible with the IASB pronouncements.

The role of securities regulators deserves mention in this regard. Securities regulators have an obligation in promoting compatibility and reducing the range of acceptable alternatives among accounting standards for ensuring production of less diversified set of accounting numbers for movement of capital. Truly compatible high-quality accounting standards offer enormous possibilities in the context of development of capital markets around the world. They would serve to increase market efficiency by reducing the administrative costs of accessing different capital markets and by allowing investors to make informed cross-border investment decisions. It is argued that the recognition of IASB's "core set of standards" for the purpose of cross-border listing by the International Organization of Securities Commission (IOSCO) has improved the acceptability of IAS/IFRSs in India (Narayanswamy, 2006, p.968). Securities and Exchange Board of India (SEBI), the securities regulator in India, being the member of IOSCO has taken major initiatives to make Indian accounting practices compatible with international standards. Some of the new accounting standards were issued by the ICAI because of pressure exerted by the SEBI. SEBI also played a direct role in the reform process by making necessary changes in clause 32 and clause 50 of that require inclusion of statements like, cash flow statement, segment report, consolidated financial statement etc.

The prospect for convergence being very good, new initiatives are being taken to eliminate reconciliation requirements for foreign issuers. To protect the interest of domestic investors, securities regulator of the U.S. generally requires preparation of a reconciliation statement showing difference between accounting results under foreign country and home country GAAP. However, the Securities Exchange Commission (SEC) has now articulated a roadmap to eliminate the reconciliation requirement for financial statements prepared following IFRSs. The target is 2009 and before eliminating the reconciliation requirement, the Commission will be keen to see that a robust process for converging IFRS and US GAAP takes place and remains active (Tafara, 2006).

Against the above-mentioned background, we now examine the compatibility in the context of revision of AS 15.

## 3. REVISION OF AS 15 AND ITS FINANCIAL IMPLICATIONS

Before its revision AS 15 (or IAS 19 prior to its revision in 1998) was criticized widely for allowing employer too much flexibility in choosing both the methods of valuation and the way of accounting for the resulting gains and losses. There are two types of post-employment benefit plans viz., defined contribution plans and defined benefit plans. In respect of a defined benefit plan an enterprise is obliged to provide agreed benefits to current and former employees. The very nature of defined benefit plan arrangement means that the commitment is a long-term one and may well involve estimates. Accounting for pension or other defined benefit plans cost is complicated and needs careful consideration to ensure that a fair view of the position is shown.

In recent years there has been a shift in view regarding the reporting of defined benefit plan costs. Pre-revised AS 15 was oriented towards the profit and loss statement rather than the balance sheet and sought to even out the impact of pension costs on earnings. It is usual to make use of actuarial calculations in determining periodical contribution and that amount will normally be a steady percentage of payroll cost. But there may arise deficit or surplus if actuarial assumptions are not met. In such a situation variations from regular cost arise and those variations are allocated over the expected remaining service lives of current employees in the scheme. This approach leads to a position where balance sheet amount of asset or liability could have been misleading. Under this approach, asset/ liability recorded in the balance sheet is the difference between income statement charge and the amount paid to the fund. In recent years, there has been a shift of a view regarding reporting of defined benefit plan costs. The more recent approach is to make the balance sheet more sensible, but perhaps accept greater variation in the pension costs in the income statement (Elliot & Elliot, 2002). According to the new view that is endorsed by IAS 19 (revised) the financial statement should reflect at fair value the assets and liabilities arising from an employer's defined benefit obligations and any related funding. Moreover, the income statement should record the change in the balance sheet position.

The revised AS 15 has also adopted the approach endorsed by IAS 19 to foster international harmonization. Revised standard proposes certain fundamental changes to the accounting for employee benefit schemes.

The key differences are:

- a more comprehensive coverage of employment benefits;
- the requirement of recognizing both legal and constructive liabilities except termination benefits;
- the use of an approach based on market value for the assets in a defined benefit scheme, as opposed to the actuarial valuation;
- the use of interest rate on government securities to discount the liabilities of a defined benefit scheme, rather than the (higher) expected rate of return on scheme assets;
- gains and losses to be recognized fully and immediately in financial statements, rather smoothed over the employees' average service length; and
- more detailed disclosure requirements.

## 4. COMPATIBILITY OF EMPLOYEE BENEFIT STANDARDS - A GLOBAL COMPARISON

A close look at the revised AS 15 (2005) reveals that there are certain areas where treatments differ from that of IAS 19. In this section, we compare the requirements of the standards issued by the three notable standard setting bodies, the ASB of India, the ASB of the UK and the Financial Accounting Standard Board (FASB) of the USA vis-à-vis the requirements of IAS 19 issued by the IASB. However, the treatment of actuarial gains and losses, one of the most controversial issues that led to a limited revision of IAS 19 in 2004 is considered in the next section. The comparative position considering the major issues where treatment differs among standards is presented in Table 1.

Table 1
**Comparative Position of Employee Benefit Standards**

| Particulars | IAS | AS 15 (2005) | US GAAP | UK GAAP |
|---|---|---|---|---|
| (i) Discount rate for determination of Present Value | Market yields on highly rated corporate bond. | Market yields on government bond. | Similar to IAS approach. | Similar to IAS approach. |
| (ii) Termination benefits | No distinction is made between "special" and other termination benefits. Termination benefits are recognized when the employer is demonstrably committed to pay. It is not necessary to wait for formal acceptance by the employees. | Revised AS 15 takes a formal approach towards recognition of liability for termination benefits. As compared to IAS 19, it does not allow recognition of liability merely on the basis of adoption of a detailed termination plan. It advocates for waiting till the acceptance of such a plan by the employees. Thus, it deviates from the concept of giving importance to constructive liability over legal liability. | Requires recognition of special (one-time) termination benefits when employees accept the offer and the amount can be reasonably estimated. Other contractual termination benefits are required to be recognized on the basis of an enterprise's decision to offer voluntary redundancy when it is probable that employees will be entitled and the amount can be reasonably estimated. | Similar to IAS approach. |
| (iii) Accounting treatment of expenditure on termination benefits during transition period | No Specific rules for treatment of such expenditure during transition period. | In preference to the general rule of immediate expensing of expenditure on termination benefits, amorti- | Similar to IAS approach. | Similar to IAS approach. |

*Table 1 (contd...)*

| Particulars | IAS | AS 15(2005) | US GAAP | UK GAAP |
|---|---|---|---|---|
| | | zation over 5 years is allowed for expenditure incurred during initial 3 years after the standard coming into effect. | | |
| (iv) Recognition of Defined Benefit Asset | Provides that the asset should be recognized to the extent of the total of (i) any cumulative unrecognized net actuarial losses and past service cost; and (ii) the present value of any economic benefits available in the form of refunds from the plan or reductions in future contributions to the plan. IAS 19, however, also provides that the application of this should not result in a gain being recognized solely as a result of an actuarial loss or past service cost in the current period or in a loss being recognized solely as a result of an actuarial gain in the current period. | Applying prudence revised AS 15 does not allow recognition of defined benefit asset to the extent of unrecognized past service cost. | No such limitation on the amount that can be recognized i.e., there is no ceiling on defined benefit asset recognition. | Similar to IAS approach. |

*Table 1 (contd...)*

| Particulars | IAS | AS 15(2005) | US GAAP | UK GAAP |
|---|---|---|---|---|
| (v) Recognition of past service costs related to benefits that have vested | Requires immediate recognition. | Similar to IAS approach. | Amortized over the remaining service period of employees to whom benefits are vested. | Similar to IAS approach. |
| vi) Multi-employer plan that is a defined benefit plan | Requires that the multi-employer plan as a whole be measured in accordance with IAS 19 as defined benefit plan and allocated to individual group entities in accordance with the contractual agreement or stated policy for charging out the net defined benefit cost. If there is no such agreement or policy, the net defined benefit cost is recognized by the individual group entity that is legally the sponsoring employer for the plan. In these circumstances, the other group entities would account for the plan as if it were a defined contribution plan. | Similar to IAS approach. | Accounted for as a defined contribution plan irrespective of availability of information. | Similar to IAS approach. |

## 5. TREATMENT OF ACTUARIAL GAINS & LOSSES

Actuarial gains or losses result from changes either in the present value of defined benefit obligation or change in the market value of the plan assets. IAS 19 requires that only a portion of actuarial gains and losses should be recognized if the net cumulative actuarial gains and losses exceed the greater of :

- 10% of present value of defined benefit obligations, and
- 10% of the fair value of plan assets.

It further provides that such excess should be divided by the expected average remaining working lives of participating employees to arrive at income statement charge. The treatment is similar to the stand taken by the FASB. The 10% corridor approach of the IASB and the FASB coupled with deferred recognition deals with volatility by smoothing it out through the profit and loss account over a long future period. Faster recognition is also allowed, if it is followed consistently. The ASB of the UK has found a better way of recognizing volatility and risk inherent in a defined benefit pension scheme, while protecting the income statement from massive swing that could swamp the results of the reporting entity. It requires that such gains or losses should be recognized immediately but be dumped in the statement of total recognized gains or losses (STRGL). Revised AS 15 does not allow deferred recognition of actuarial gains or losses and requires immediate recognition in the profit & loss account itself. It is argued that immediate recognition generates income and expense items that are not arbitrary. ASB of the ICAI is generally criticized for following strictly the accounting standard issued by the IASB (Banerjee, 2002). But, the ASB has taken a logically sound stand with respect to treatment of actuarial gains or losses as it has truly adopted balance sheet approach and tried to recognize liability that is consistent with definition of liability given in conceptual framework (IASB, 1989).

Moreover, by advocating recognition of actuarial gains or losses immediately instead of smoothening of such gains or losses over a number of years, the requirements of the revised standard are closer to the requirements of the UK GAAP (FRS17). It may be further pointed out that in December 2004, the IASB finalized an amendment to IAS 19 to allow the option of recognizing actuarial gains and losses in full in the period in which they occur, outside profit or loss, in a statement of recognized income and expense (SORIE). This option is similar to the requirements of the UK standard, FRS 17, on Retirement Benefits. The Board concluded that, pending further work on post-employment benefits and on reporting comprehensive income, the approach in FRS 17 should be available as an option to preparers of financial statements using IFRSs. Thus, the IASB has taken a flexible approach over this controversial issue and allowed following options regarding actuarial gains and losses:

- by following a 10% 'Corridor Approach', which results in deferred recognition of the actuarial gains and losses, or
- by following any systematic method if it results in faster recognition (e.g., immediately in the statement of profit and loss), or
- immediately outside the profit or loss in a statement of changes in equity titled 'statement of recognized income and expense'.

However, it remains to be seen whether adopting such an approach of increasing the alternatives increases the usefulness and comparability of financial statements.

## 6. CONCLUSION

Accounting standards do not change the ultimate cost of a pension plan, but companies should be aware of the effect the standard will have on their financial statements. Adoption of a similar standard in the UK, Financial Reporting Standards (FRS) 17, has raised awareness of pension liabilities and caused an outcry in the business community. As a result of FRS 17, some companies are reporting pension surpluses, while others are disclosing large deficits and citing FRS 17 as the reason for closing their defined benefit schemes and/or changing to defined contribution arrangements. In India, there may not be much resistance against adoption of revised AS 15 as defined benefit schemes are not very popular among Indian companies. However, in sectors where defined benefit schemes are prevalent (e.g., banking , financial institutions, etc.) there is move to assess true liabilities. Further, the government is asking banks to move away from a pension scheme with defined benefits to one where banks would have to make defined contribution.

It is be hoped that adapting the IFRSs through integrating them into Indian accounting standards would enhance the comparability of financial information required for evaluating cross border investment options. Apart from formulation, it is important to enforce compliance with requirements of the standards in substance. It is generally perceived that significantly strengthened enforcement mechanisms are needed to further improve quality of corporate financial reporting. An institutional framework that facilitates cost-effective private litigation by stakeholders is also critical for raising the quality of Indian financial reporting.

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# Long Term Investment Decisions : A Commentary on the Changing Profile of the Problems of Appraisal and Valuation — The Managerial Perspective

**Manipadma Datta***

## Abstract

The basic paradigm of business has got shifted, making the capital budgeting more complex an exercise. A number of new techniques are therefore being tried to finetune the capital budgeting in recent times. This paper makes an attempt to identify, analyse and prescribe strategies for them with a focused outlook.

***Key words*** : Capital Budgeting; Risk; Beta; Market Portfolio; New Economy; Old Economy; Real Option; Behavioural Finance.

## 1. INTRODUCTION

The world of business has changed more drastically than ever before during the last decade. Many a thing has ceased to exist, on one hand, and, on the other, very many things have assumed renewed importance. The world has obviously become a smaller place with reduced scope to the firms to twist the market to their convenience. So many new markets have emerged almost out of the blue not because of the technological advances only, but also due to the emergence of newer management philosophies and techniques. Product customization, concept of niche marketing, business process outsourcing, profit centre concept, emergence of the tertiary sector in a renewed way and the like have made some serious changes in market conditions and thus created some unique opportunities so far unknown in the market. But all these positive aspects have also created a number of additional hassels to be taken care of. The paradigm has been shifted from a 'caveat vendor' doctrine to

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a 'caveat emptor' one. Thus the greatest ever risk for a business house now is stemming from its capacity to manage the competitive optimality at the customers' satisfaction levels. In fact, "sustainable customers' satisfaction" is what the business world over is running after. The major focus of a business strategy is devoted to this. The new economy itself became the most formidable challenge to the very existence of the old economy and its continuity as perceived initially almost a decade and a half ago. However, as a matter of fact, a synergy between brick and mortar and infotech segments has started building up gradually, particularly during the post crash period of the dot com sector for the first time. There have emerged some common risk factors that a modern organization can hardly afford to avoid. The risk of marketing a wholly new product is more challenging now a days despite a much sophisticated communication network that ensures a wider market, since the information of failure or success would pervade all the market segments with the lightening speed. Gone are the days of exploiting the information asymmetries due to an ever-ailing marketing communication system. Any insider information would take hardly a couple of minutes to reach every nook and corner of the market. Thus the idea - financing, the essence of capital budgeting, now demands the project investors to be more cautious than ever before. The purpose of this paper is to focus on the changing dimension of the problems of the long-term investment decisions managers now-a-days cannot afford to ignore.

With this backdrop, we can summarize as follows the critical issues that have provoked us to reopen and challenge the existing issues involved

- That last decade and a half things have been *changing much faster;*
- That much faster has been the *transition* than expected *from* a *sellers' world to a buyers' domain* ;
- That the emergence of the *new economy* has thrown newer challenges to the existing system of accounting;
- That *globalization* is either adding newer dimensions to the problems or creating new problems to tackle with;
- That the days of information imperialism being over, telecommunication improvements have considerably eased the problem of information asymmetries;
- *That corporate management being too demanding* on individual managers' time and space, corporate decision making process is under bigger stress.

## 2. OBJECTIVE OF THE STUDY

This paper makes an attempt to identify the emerging risk factors caused by the rapid changes taking place in contemporary business world. The basic paradigm of business has got shifted from 'caveat emptor' to 'caveat vendor' in recent times, courtesy the enhanced level of competitiveness due to opening up and globalization the world over. This shift itself is strong enough to create considerable vulnerability in the revenue model traditionally followed by the firms. And in fact, it has done it. That is why a number of new techniques like real options have been tried to fine-tune the capital budgeting and valuation decisions in recent times/(Majumdar and Datta, 2004).There are other examples too that made the area of capital budgeting more complex an exercise. We shall make attempts to identify, analyze, and prescribe strategies for tackling these. An attempt would also be made to provide a framework for tackling the problems with a conscious and focused outlook.

## 3. THE PROBLEMS AND CONSTRAINTS TO CAPITAL-BUDGETING AND VALUATION : the Changing Profile

The common risks and uncertainties generally associated with long-term investment decisions are quite well-known to the researchers. We will avoid repetitions where possible. But in some cases, where a reasonable solution is yet to appear, we may have a re-look at them. Moreover, there are problems that are closely related to some newer ones; those ought to be discussed in the renewed context.

### Accounting Risk: the problems from Systemic Inaccuracies

In capital budgeting decisions, it is pertinent for the managers to ensure that the project with the best prospect is selected. The selection criteria depend on the numbers that are estimated. The task of estimation is mainly based on the generally accepted accounting principles (GAAP), which have some inherent problems and contradictions that might affect a decision making more adversely than the way it affects the process of recording historical costs and revenues. Thus, this constraint happens to possess larger ramification while used as the background information for a decision that is having higher magnitude both in terms of time and investments involved. The problem becomes more intriguing while added with newer complexities and gives birth to the following questions.

- What would be the measure of profitability – accounting or economic profits?
- Which is more relevant in present context – accounting or economic depreciation?

- In the context of increasing assets volatility, how should we proceed for a continuous assets valuation?
- Is growth equal to options created on 'assets in place' while the new economy firms hardly hold substantial physical assets?
- How should we reconcile with the fact that an individual assets' risk does not remain static in this time of faster innovations?
- While considering the above, how much relevance would be left for a borrower firm's tax shield?
- How should we value the assets that are fully depreciated but still in use?

Unless we find the reasonable answers to these, a capital budgeting decision would always remain under considerable doubt.

Risks stemming from the inaccuracies embodied in accounting measurement are not unknown and have partly been addressed by the net present value (NPV) of the Cash Flow (CF) approach, and replacing accounting profitability by economic measurement (Brealey and Myers, 2003). The project valuation is considered as a continuous function through a modified rate of return (MROR) which, in symbols, would be:

$[\{CF_1 + (PV_1 - PV_0)\}/ PV_0]$

where, $CF_1$ = net cash inflow in year 1;

$PV_{0,1}$ = present value of the assets in year 0 and 1.

The risks associated with accounting inaccuracy and biases have also discovered a theoretical savior in the technique of measuring the economic value added (EVA) by the firm. This will however come into our discussion later in a more appropriate place. The inaccuracy involved in the calculation of depreciation also poses an equal threat, which could be partly hedged by calculating economic depreciation, which is nothing but the decrease in the present value of the depreciable assets, for the purpose of project evaluation. There is however an argument offered by some that all these anomalies would vanish in the long run once the things settle down and the differences between new and old projects reduce. But the empirical evidences say that the anomalies do not vanish altogether, they get mitigated. (Brealey and Myers, 2003). But the risks emerging from the series of innovations taken place particularly during the last decade with an unmatchable pace poses a different kind of threat. The effective life of a machine, at times, more frequently in the developed part of the globe, can hardly be of any help for calculation of depreciation, whether accounting or economic. The problem does not stop here. Depreciation being a very big component of the cash inflow anticipated in the project, the profitability aspect becomes further uncertain in such cases. We should also not miss the context of tax advantage of the depreciation and it's NPV. Then even such a kind of uncertainty does affect the postulates under Modigliani-Miller hypothesis.

Second, while a faster innovation track jeopardizes depreciation accounting considerably, business valuation exercise gets adversely affected. In a firm, as is done more often than not in India, how to account for and value the assets those have been wholly depreciated but still very much in use? Computer hard-wares and softwares can be offered as a common reference to this problem. The accountants might answer with a proposal to streamline the problem through their mechanism of accounting standards. But the hollowness of such effort is perhaps best known to them only.

The third problem emanates more from the technological issue than from accounting limitations. In this context of shortened life span of an asset, the firm may be forced to dismantle the asset in the face of sheer competition. The firm gets exposed to further risk since the market value must have come down. And, had the asset been customized by the firm to cater to its requirements typicality, the tradability vis-a-vis market value must have plunged further down. Similar confusion arises when assets that have been fully depreciated but still are very much in use. In India, there are umpteen numbers of cases where the assets, particularly the computing facilities, both hard and soft wares, are in effective use even after having enjoyed 100% depreciation allowed by the taxation authorities. This kind of situation creates multidimensional problems both for accounting and valuation. In case of a replacement decision, what would be considered the economic incremental cost? This could be very common a problem for the firms from the third world.

Another dichotomy persists with accounting for long-term assets' depreciation. Depreciation, as is evident, is perhaps the largest source of fund in case of physical assets-based firms. Depreciation is the backbone of liquidity management in many firms. But, even after successful introduction of relevant accounting standard, the allegation of financial anomaly is yet to be solved. If it is not taken care of, the NPV estimation would continue to suffer. Even the effectiveness of firms' treasury operations would not be beyond doubts.

## Accounting Risk : Incompatibility vis-a-vis New Economy Requirements

The new economy dot com companies follow a revenue model that largely differs from the traditional ones. There is yet to develop appropriate accounting practices to recognize dot com revenues. Large chunk of earnings of these companies comes from bartering the advertisement banners. These are like-for-like transactions and possess the nature of sales. But accounting practices are silent on recording since 'when you exchange something for another type of the same thing it's not revenue' as the then technical director of the Accounting Standards Board (ASB) did put it. (*The Financial Times*.

March 25, 2000). Furthermore, revenue sharing arrangement with the partner websites constitutes almost 50% of the e-commerce companies. The partner's share is treated as a cost. Moreover, the third party transactions are also taken as a part of an Internet company's total earnings. Although it does not altogether distort the gross profitability of the companies, this creates hurdles for proper valuations. Majority of such companies are still loss making despite the fact that their scrips continue to enjoy high market quotations in the stock exchanges. For example, Amazon.com has always been adjudged a losing company under the existing accounting measurement practices with its shares remaining one of the highest quotes in NASDAQ. This simply reiterates the fact that we don't have the accounting practices we need, more particularly vis-a-vis the new economy companies that follow a different revenue-cost model. Incomes from banner bartering, traffic bartering, sharing with partners, third party commissions and the like could hardly be denied as revenue. At the same time, it is harder even to recognize those as incomes under the present accounting practices.

Therefore, gross revenue and its growth rate are taken to be the most important factor for a firm's valuation. But as is evident, the sales or gross revenue figures do not appear to be truly indicative of a company's real potential. In fact, recording gross turnover in any way lacks the GAAP approval. Thus the companies do have a tendency to inflate their potential by fattened figures of sales. This could perhaps be one of the biggest reasons why the Internet companies initially were so overvalued and why the balloons have shrunk so quickly after a while. The trend continues however with a reduced pace now.

To conclude this part, we find that we have the accounting system that is in true sense neither contemporary nor futuristic. It lacks long-term perspective, which is a bare pre-requisite to pricing and valuation. While the present time is, evidently growth-driven, future is fully impregnated with possibilities. But our measurement logistics are grossly inadequate. In that respect there appears to be enough substance in the argument that, in India, Schedule VI of the Companies Act has become largely out-dated in real sense of the term (D'Souza, January, 2006). This adds to information asymmetries as already existing and may tend to hurt the level of competition.

## Risks that NPV Cannot Write Off

In an efficient and competitive market, theoretically there can not be a project with an NPV > 0. In such a market situation, at present what the whole world seems has been inclined to, due to many a factor, economic, political, technological or otherwise, the spread between the firm's internal rate of return (IRR) and its weighted average cost of capital(WACC) gradually is expected to come down. However, none of us perhaps lives in such an ideal situation. So the rule of acceptance or rejection on the basis of NPV is normally accepted. And this excess of NPV, as the economists say, is attributable to what is known as 'Economic Rent'. But what is puzzling is that in a similar kind of economic situation, companies belonging to the same risk class, enjoy different economic rent. It is hard to accept that the economic rents are merely windfall gains! As the experience suggests, they are not. Then in case of capital budgeting, economic rent factor should be considered with due importance and be planned for. But the question remains as to how to identify and measure them.

Another problem disturbs almost in the same way. It comes from the hitherto unexplained differences in the risk profile of the real assets of the same class. And, interestingly enough, more technologically sophisticated the asset is, less would be its resale value in the market with higher risk of obsolescence. Thus the monitoring risk of the projects is becoming higher day after day because of a positive transition to a much improved technological era. But the only puzzle remains that this risk significantly differs amongst comparable projects too. We may put an end to this by explaining the missing link with the help of the hunch the managers and investors may depend on. But a seat-of-the-pant decision is not a logical argument indeed. Even the operating leverage differences cannot resolve it fully (Lev, 1974; Mandelker and Rhee, 1984). It is not always necessarily true that higher the fixed cost greater would be the risk. Foster (1986) has provided us with a long list of factors that could probably provide us with a better clue. But it would not be very practical to think of a manager chucking out time from her/his busy schedule to go for a long trial and error. Rather the difference between the perceived credibility of the manager or entrepreneur concerned might offer better argument. Microsoft and Netscape are not perceived at par. Nor even Microsoft with and without Mr. Bill Gates. However, attempts are there to accommodate the fuzziness and discrete compounding in capital budgeting decisions (Kahraman and Bozda, 2004).

However this discussion practically may make someone a little bit sick and snatch away the enthusiasm to try for he NPV technique even, although, till now, being the best among others to avoid a baffling situation and save the time cost involved in the evaluation process. The survey done in the USA (Harris, Kriebel, and Raviv, 1978), although a little old, found that barely 74% of their US samples were using Payback method. In a similar exercise by Schall, Sundem, and Geijsbeek (1978), it was observed:

> there remains a wide variation in sophistication among firms. There is slight evidence.....that the level of sophistication in capital budgeting methods is positively elated to the size of the firm's capital budget and negatively related to the firm's beta value.

Even after almost four decades things have not changed much. Ryan and Ryan (2002) in their work taking Fortune 1000 have noticed that the majority of firms have not yet abandoned the less complicated and lesser accurate traditional evaluation techniques. However, the trend has considerably improved in favor of using the NPV technique too.

## Customers' Sustainable Delight : the most formidable challenge in a world of increasing competitiveness

In the face of competition, the question of customer loyalty can hardly be overemphasized. Even in an exclusive monopoly, this point cannot be ignored for long. Since the inception of trade and commerce, however, the human history has been more a witness to a sellers' market instead. It was mostly a 'caveat emptor' situation. In India, the Sale of Goods Act, 1930, has been designed with this paradigm in mind. Until recently, this piece of legislation has been the only *veda* to rule over the world of business transactions. But like so many other good things, due to enhanced level of competition equipped with the tremendous growth in communication technology, it has now become the buyers' turn. Consequently, in India, like all other modern nations, law to protect the customers' interest has finally become more relevant with the passing of the Consumer Protection Act in 1986.

In fact, 'customer protection' as a doctrine now a days sounds quite primitive. Customers, both existing and the prospective ones, are the source of strength and happen to be the most significant off-balance sheet asset of a firm. In recent times, the doctrine has graduated to 'customers' delight' via 'customers' satisfaction'. The gravity of the change is well understood with the emergence of a completely new area of study called 'Customers Relationship Management' (CRM). The area is too sensitive. The business houses all over the globe are just more than ready to respond to the call of the customers. The cost cutting exercises that are largely responsible for the emergence and growth of BPOs, are also primarily directed towards ensuring customers' satisfaction in the context of ever-increasing fierce price wars. These are true both as regards the class or mass products and services. The existing ratio between the number of buyers and sellers has also been tilted accordingly. Although, it is yet to be in vogue, customer base has been started being included by many companies world wide since 1993 as a major component of intellectual capital that does the magic without any appearance in the firms' balance sheets, when Skandia AFS, a Swedish firm pioneered the practice (Edvinsson and Malone,1997). Therefore, in the context of capital budgeting risk management, proposing to treat the renewed strategic importance of customers' loyalty as a major new age risk factor would not be in any way an overstatement. Rather to put it in more appropriate perspective, let us emphasize on its sustainability part. It is the sustainable delight that could only solidify into dependable loyalty. Sustainable delight is a continuum. And not only that. When more efficiently nurtured, it demands heavier attention from the sellers and that gallops to grow at times. Here, it is to be kept in mind that it is not the product/ service quality that is only to be ensured. Quality is more a relative term. Instead it is more important to understand in a rather .clinical way what means quality to customers. And here lies the risk that has to be kept in consideration while deciding on a project. The International Federation of Accountants (IFAC) has listed out the following elements under the head customer capital:

- brands
- customers
- customer loyalty
- company names
- backlog orders
- distribution channels
- business collaborations
- licensing agreements.

For all practical purposes, in present day business world, no long term investment can be decided without considering the customer risk factor, which is hardly the practice in vogue as yet. While making the estimation of revenues, if the discount factor chosen does not contain this risk component, the risk remains uncared for and under-hedged and decision is taken on unfounded optimism. This is more important perhaps in case of the project that would deal with a concept product where there is no idea about the composition and moods and requirements of the would–be customers. But the question remains how to account for that. Rationally, a firm on higher range of customer relationship indices, if such a set is reason-ably developed, deserves to use a relatively low discounting factor.

### Risk from the Myth and Contradictions in CAPM

Under Capital Asset Pricing Model (CAPM) assumptions, unique or unsystematic risk of a firm or stock does not have a price in the market. And this is so well received the world over that any contrary observation would put this author's sanity under doubt. But the fact remains, a little keen observation would discover that many times it is evident that a portfolio with a bit of unique risk fetches better return. In the stock markets it still remains unexplained why some stocks always fetch better price than others despite their risk profile remains the same. Is it because the investors do have some kind of extra faith in some companies' ultimate efficiency to deliver? What shall we call this extra return? Faith premium? Is it not the premium the market pays for the unique risk involved in the portfolio?

Another deficiency found in the CAPM is that it fails to approve or disprove conclusively (Roll, 1977; Mayers and Rice, 1979). It has been found that the average rate of return from low- beta stocks over a period tends to be higher and from the high-beta stocks tends to be lower than the predicted returns by CAPM. Roll also argued that a market portfolio must include all assets, both financial and physical, which is not done under CAPM. In fact, ideally an efficient market portfolio should include all the new found assets too, physical and intangible. Another interesting point is, the individual market value of the assets does not necessarily add up to the portfolio value. Fame and French have also found apart from beta, the history of standard deviations and the firm size do also matter. All these arguments are offered here not to prove the limitations of beta as such. The crux of the point is, a lesser perfect beta would affect a capital budgeting decision and further jeopardize the situation. Almost all the firms which use discounting the flows as a valuation technique are sure to reach under-informed judgments. Not only that many other areas including the calculation of economic value addition (EVA) would be equally affected. Moreover, CAPM does not appear to be comprehensive enough to accommodate the new economy asset factors too. Thus, this remains another big challenge to capital budgeting and project evaluation brought forward from the earlier age without much scope for modifications as yet. And there is no other better technique in the sight as yet to replace CAPM. However, given the situation, beta still remains our uncontested choice (Lorie, Dodd, and Kempton, 1985).

## 4. CONCLUDING REMARKS

All the previous paragraphs of discussion have been to prove the point that the capital budgeting techniques we use are not really fool-proof ones and there remains a scope to time-tune the evaluation techniques. And, the emergence of so many new things in the world of business has thrown more undefined challenges to us. This has further complicated the field. It is not that the things are first discussed here only. The business researchers are quite well concerned with this. There have been efforts to find out the newer path of valuation of the long term investment. A number of techniques have been tried either to offer some alternatives to get over the situation. Real option is one of them. But the real option technique as used also is subject to almost the same set of risks of inaccuracies. Moreover, real option is not a panacea nor can it even address all business uncertainties. Similarly, the measurement techniques like Balance Score Card, Performance Mapping, Intellectual

Capital Co-efficient and the like address different segments of the problem in a compartmental way, whereas we need a holistic approach for all practical purposes. Moreover, all these are not beyond question. Moreover, Price-Water House Copper (PWC) in its recent book *Building Public Trust*, has disclosed the findings of an unpublished survey in which 69 per cent of executives reported "that they had attempted to demonstrate empirical cause and effect relationship between different categories of value drivers and both value creation and future financial results. Less than one-third of these felt, they had truly completed the task; this suggests that balance score card is not as user friendly as its conceptual soundness.

Some of these problems are so subtle and complicated in nature that it could kill a lot of managerial time. Again this is another area which is generally not so seriously taken cognizance of. But in reality that time becomes the strategic center of some crucial decisions.

The problem of customers' sustainable delight needs to be treated with a different stroke by combined efforts between the finance and marketing experts. In recent times some new types of research has been attempted. The work of Gupta and Lehmann (2005) is worth mentioning here. They have attempted to deal with the issue in the perspective of investment appraisal. Although theirs is not the ultimate, their attempt to logically quantify many a subjective component involved in the issue will certainly go a long way. They have introduced the concept of 'Customer Lifetime Value' (CLV) which could help firms in customized ways to devise the metrics they need. CLVs could be used both as investment and profit centers depending on the customer demographics. In a simple expression,

$CLV=m[r/1+k-r]$

Where,

$m$ = margin from a customer per period;

$r$ = rate of retention;

$k$ = the discount rate applicable or the cost of capital.

Thus, CLV is the product of margin and a factor equal to $(r/1+k-r)$. This has been called the margin multiplier which is a function of r and k. While r has a positive correlation with the multiplier, k has naturally a negative correlation. It may face a lot of hurdles to put this formula into application with the right feed of dependable data. However, the formula has correctly covered the customer risk factors. It has recognized that the margin multiplier is low when discount factor is high and customer retention is low, and, conversely, it is high for a low-risk firm with high retention rate. The retention rate, as we all know, depends on the fact of how far the firm is really customer-centric.

When expanded, with respect to r, by differentiating, we get the following:

$(\partial CLV/\partial r)= ((m(1+k)) / (1+k-r)^{\wedge}2$

Therefore the retention elasticity ($E_r$) would be

$(\partial CLV/5r) * (r/CLV)$

$= [((m(1+k)) / (1+k-r)^{\wedge}2] * [(1+k-r) / mr]$

$= (1+k) / (1+k-r)$

= 1+ margin multiplier.

Similarly, we can get the margin elasticity which would be=1.

The value of m ought to be positive in such cases for obvious reasons.

Therefore, $E_r > E_m$.

Thus the message is clear. It is not the margin, but the retention rate should be the ultimate touchstone in this increasingly customer-driven world.

There are also works being carried on and a new subject is on the horizon, Behavioral Finance, that takes a lot of intangibles apparently irrational psychological points in mind to explain all these financial haze. In their path-breaking paper Patel, et al (1991) discussed, analyzed and shown a direction to attain neo rationality in the context of financial markets. A number of economists have been engaged in mixing psychology and economics in a tangible and composite way. However there is other view too who feel this efforts purely academic and nothing tangible is achievable (Thalar, Richard H., 1999). Research is on.

This study was a modest attempt to provoke further research in this area. Capital investments are the high-ways to a nation's process of wealth creation.

Consistent upward mobility in investments is a prime parameter of economic development. Therefore we cannot afford to ignore the task of time-tuning and continual honing of the appraisal techniques. The issues have been raised to provide a further fillip to the process of on-going research.

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# Valuation of Intellectual Capital – A Case Study

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## Abstract

This paper attempts to develop a model to estimate intellectual capital. A case study on Infosys has been done inter alia to substantiate the efficacy of the model so developed.

*Key words* : Intellectual Capital; Structural and Human Capital; Market to book value method; Metaphysical reality; Constellation.

## 1. INTRODUCTION

Learned philosophers have suggested that metaphysical reality exercises more influence on human beahaviour than objects that we see and touch. Today the need has arisen to recognize those intangibles, which increasingly drive economic and social activities of the world. In spite of information and technology being at the helm of global competition increasing number of companies expect their employees to make use of their brains to create value in the business. Superior knowledge of products, management techniques and styles, skills, markets, methods, systems, procedures, human resources, policies, quality of work life, cultures etc. In nutshell, the intangible factors that constitute the assets in the form of knowledge often determine who prevails in the stage of world competition.

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Very often it is found that for the service sector and knowledge intensive companies the market value of the firm far exceeds the book value. What causes this difference? The intellectual capital is probably the reflection of the shareholders'perception of the real worth of the company that is reflected in the market value of the company. With growing importance of intellectual capital, corporates of the new economy have tried to value their intangible assets. Many knowledge scientists are coming out with new models for valuation of such intellectual capital. Though the basic concept behind these models remain more or less same, difference between the market value of the firm and its book values gives us an estimate of the intellectual capital or knowledge assets of the company.

According to Mouritsen (2003), the underlying philosophy of Intellectual Capital is that Intellectual Capital is a bundle of knowledge resources, a constellation of employees, users, processes and technologies, which enables a company to make a difference to users via its knowledge resources.

Intellectual capital is the total stock of capital or knowledge-based equity that the company possesses. It can either be the end result of a knowledge transformation process or the knowledge itself that is transformed into the intellectual assets of the firm. In balance sheet terms, intellectual assets are knowledge-based assets, owned and used by a company to obtain profits in future.

Brooking (1996) defines intellectual capital as the "combined intangible assets which enable the company to function." In other words, she sees an enterprise as the sum of its tangible assets and its intellectual capital. Such intellectual capital is considered to be the sum of human capital and structural capital (i.e., customer relationships, information technology networks and management) as per Edvinsson (1997).

Building on these basic definitions, experts have identified areas of an enterprise where Intellectual Capital is the sum of human capital and structural capital. Human capital consists of the capabilities of the company's employees necessary to provide solutions to customers, to innovate and to renew. In addition to individual capabilities, human capital includes the dynamics of an intelligent (learning) organization in a changing competitive environment, its creativity, and innovativeness can be found. Structural capital is the quality and reach of information technology systems, company images, databases, organizational concept and documentation. Structural capital includes customer capital. It is the value of relationships with people with whom a company does business. Although this usually means clients and customers, it can also mean suppliers. It has also been referred to as *relationship capital*. It is the interplay among human, structural and customer capital that helps determine the true value of a company's overall intellectual capital.

## Nature of the Problem

It is often believed that such Intellectual Capital is the driver behind the widening gap between a company's market value and the value of all its tangible assets. But the debate originates from the fact that no monetary value is placed on the intellectual capital. The problem is two fold:

- Such gap between market value and book value is *not reflected* in the traditional accounting statements. Hence the user of accounting statements, particularly shareholders reading the balance sheet have no indication that the real value of the business (in terms of market price of the shares) is far more than what such balance sheet reveals.
- The *drivers* that create such intellectual capital and are responsible for its change, and thus bring about certain fluctuations in the market value (which is way above the book value, in many cases) *remain disguised* in the traditional accounting records.

Though no standardized methodology or accounting practice has been made mandatory for revealing the causes behind the high market value of the companies in question, but there are a number of techniques being considered to tackle this problem.

In this case, the giant leap of the value of Netscape in 1995, from $17 million company to $3 billion in a matter of days was accountable to the knowledge, skills and creative ability of the employees of Netscape. However, these failed to remain disclosed in the balance sheet of Netscape. Again, Microsoft, for example, saw its stock climb to more than $100 per share when it announced Windows 95. As a result, Microsoft became more valuable than Boeing overnight. Thus the book values of the assets of these companies, no more had a direct bearing on the market values of the shares of these companies.

## Objective of the Study

The objective of the paper has been to estimate the intellectual capital of the software giant Infosys Technologies Limited over a five year period from 2001 to 2005 by measuring the gap between a company's market value and the value of all its tangible assets.

The paper also, seeks to develop a model with the help of which companies will be able to estimate their Intellectual Capital given the available expenditures on the independent variables, which are the primary drivers behind such intellectual capital. Consequently, the model shall be able to evaluate the level of economic effort required by the concerned company to bring about the difference in market value and book value of the firm, hereafter referred to as the value of Intellectual Capital.

## Design of the Paper

At the outset, the paper tries to place monetary value on the Intellectual Capital of Infosys Technologies, the poster child of the Indian software services industry by using one of the simplest methods of valuation of Intellectual Capital, market to book value method. Following this, an attempt has been made to relate such Intellectual Capital over a five-year period to the resources responsible in creating such intellectual capital. It is assumed that the primary contributors to such intellectual capital creation have been employees and customers. So the paper has tried to study the change in the Intellectual Capital (increase in this case) over time from the point of view of the human (employee) and customer perspectives (measured in terms of net revenue).

## 2. LITERATURE REVIEW

The notions of intellectual capital were first advanced by economist John Kenneth Galbraith in 1969. It was further expounded upon by management guru Peter Drucker (1993) in his description of post capitalist society. By the end of the 1990s, references to intellectual capital in contemporary business publications were commonplace (Bontis, 1999a; 1999b). Stewart in his ground breaking cover story in Fortune magazine is credited with providing the main impetus for a new world of intellectual capitalists (Stewart, 1991). He defined Intellectual Capital as intellectual material-knowledge, information, intellectual property and experience-that can be put together to create wealth. Highly respected scholars like Lev (2000) Tom Davenport (1998) and practitioner icons such as Lief Edvinsson (1997) and Hubert Saint-Onge (2002) also made phenomenal contributions in this arena.

Much of the international research that has been done in this area has assumed it is possible to devise information systems that can generate invisible equivalents in monetary terms of balance sheets and various methods have been proposed, for treating employees as balance sheet items, measuring them in currency. Another approach is to introduce probabilities or to discount a person's output during a life. While theoretically interesting, unfortunately some of the attempts made by Grojer & Johansson (1991) to convert people or competencies into money have proved useful for managers. It is no problem to design indicators; the problem is how to interpret them.

The research in Human Resource Costing and Accounting has brought forward some interesting Swedish projects, namely, Johansson and Nilson (1994) both at Eriksson and in the public sector Telia (Telia Statement of

Human Resources 1994), giving an emphasis on personnel accounting calculations, for use in decision-making. They have, for instance, assessed the cost of sick leaves and of personnel turnover and designed indicators that can be used as rule of thumb by managers.

Peder Hofman-Bang (2003) emphasized that valuation and subsequent reporting of Intellectual Capital enhance the capability of investors to better understand the value and potential of the hidden intellectual resources of an enterprise in order to make judgements about its capabilities to perform in the future. He defined Intellectual Capital as the factors of critical importance to company's future success that cannot be found in the traditional balance sheet. He introduced the "IC value creation platform" consisting of human capital (employee and their individual knowledge), organizational capital (internal structures, work processes, codified knowledge, etc.) and relational structural capital (customer relations, brands, and business partner relations) which all interact to create the financial capital of a company.

Juergen H. Daum (2002) suggested that companies should report on the process performance of their main value creating processes, such as in Research and Development, customer relationship building, employee development. This is possible by disclosing supplementary reports along with the traditional balance sheet as done by Infosys. In India Infosys Technology has taken an attempt towards this direction by including a report on its Human Resource Accounting in its Annual Reports for the years 2004 and 2005.

At present most of the initiatives taken for improvement of corporate reporting are stressing on voluntary reporting in addition to GAAP based financial reports. For example, FASB's Framework for Supplementary Reporting requires business model description, intangibles performance measures, and operational performance measures. The Danish Government requires a compulsory Intellectual Capital statement disclosing "knowledge narrative", "management challenges" as Intellectual Capital indicators (e.g. Skandia's Navigator). Global Reporting Initiative provides the guidelines for Sustainability Reporting or Triple Bottom Line Reporting (i.e. reporting of economic performance, environmental performance and social performance).

IT concern Mind Tree Consulting has become the first Indian company to be assessed for intellectual capital (IC) rating by Intellectual Capital Sweden (ICS). MindTree received the highest possible rating of 'AAA' for its management competence. Overall, the Intellectual Capital rating puts the IT firm in the top 12 percent of all companies worldwide that have undergone such an assessment. The $102-million Mind Tree's core competencies that came on top in absolute terms and competition included internet and emerging technologies, creation and integration of IP (intellectual property) in short-range wireless and product realization. The rating is based on interviews conducted by BizWorth, the Indian partner of ICS. According to the CEO and Managing Director, of SAS India SAS, a leader in business intelligence "The world is rapidly moving towards convergence and a new business and connection paradigm is emerging: e-commerce. Here, intellectual capital will move to the mainstream of enterprise assets. Technology and services for enterprise knowledge management will evolve to support the extended, collaborative enterprise. Surviving the information flood and effectively managing it will be a critical success factor for enterprises to survive and have a distinct competitive edge."

According to B.Madhu Seshanand "By studying Intellectual Capital it is possible to explain to a considerable extent the reason for high or low market value in comparison to book value." However, as pointed out by Keyur Thaker (2002) India despite the higher significance and contributions of knowledge assets in the valuation of companies little has been done by researchers and accounting associations in capturing those knowledge assets and earnings attributable to it.

## 3. LIMITATIONS OF TRADITIONAL ACCOUNTING

The present accounting system primarily deals with measurement and reporting. An accountant always views an asset as something with a value (based on historical cost) in the balance sheet. But it is to be understood that the value of knowledge assets is in its *use* and not in its cave emerged that specifically focus on the measurement of intellectual capital. This comprises the intangibles of the business that underpin future growth. It includes assets such as brands, customer relationships, patents, and trademarks and, of course, knowledge.

There is growing criticism that the traditional balance sheet does not take account of those intangible factors that largely determine a company's value and its growth prospects. The 'unreported' assets are on average 5-10 times those of the tangible assets. Furthermore several studies show that future growth is determined not by historical financial accounts but by factors such as management skills, innovation capability, brands and the collective know-how of the workforce. Consequently more organizations are starting to address the measurement and management of intangible assets such as knowledge. It more truly reflects the actual worth of the company. The primary reason for accounting for Intellectual Capital may be because, the process of measurement gives insights into the drivers of sustainable performance and demands are growing for effective governance of intangibles, of which social and environmental reporting are already evident.

Traditional accounting measures can no longer adequately determine the real value of companies Corporations and accounting firms alike are taking this problem seriously and have been working to develop systems to identify, value and manage intellectual capital.

In the United States of America, according to the Financial Accounting Standards Board (FASB) "financial reporting should provide information that is useful to present and potential investors and creditors and other users in making rational investment, credit, and similar decisions." As pointed out by Lev and Zarowin (1999) the utility of financial information for investors has decreased over the last twenty years. Therefore firms are required to demonstrate the contribution of their intellectual assets to business performance and business values and should develop suitable indicators of intellectual capital to provide reliable information to investors.

The current industrial era based accounting system regards most intangibles as expenses, as if they are devoid of future benefits, thereby introducing serious biases to corporate balance sheets and income statements. It has been empirically shown that these reporting deficiencies cause serious social harms such as excessive cost of capital, large insider gains, and manipulation of financial reports. The solution lies in expanding the current financial reports to comprehensive disclosures, portraying in addition to the consequences of past transactions (the current system), a fair representation of the net working activities of the company, the obligations undertaken (executed as well as unexecuted) and its risk profile (Lev, 2002).

Traditional accounting was developed for the industrial economy where companies invested intensively in tangible assets-equipments, factories, inventories and other items. In knowledge based economy investments shift to intangible assets-patents, processes, trademarks, know-how, etc and the accounting system fails to provide complete reports to the stakeholders. According to Maculan (2003) new valuation metrics should be developed since it is unfeasible to make strategic decisions about risky investments without accurate calculations.

## 4. INTELLECTUAL CAPITAL: AN OVERVIEW

When a company invests on material assets like machines, money is paid out of liquid funds and a corresponding amount is booked as an asset on the balance sheet under the heading 'machinery' in accounting terms there has been negative cash flow but no expenditure. The cost is incurred gradually as the asset depreciates. When a company invests in an intangible asset like a research program or in training and development of employees it is not recorded as an asset in the balance sheet. Such an investment in employee training and research appears as negative cash flow and as a cost item. Both types of investment in purchase of machine and training of employees for research and development are inspired by the same motive, to achieve higher profitability in the long term. The expenditure on research and employee development generates value, which is clearly owned by the company, so it is reasonable to regard such expenditure as investment leading to creation of Intellectual Capital.

Intellectual Capital is caused by internal structure measured here by proxy of employee costs and external factors measured by proxy of sales revenue. On the other hand, considering the approach of valuing the intellectual capital from human capital, customer capital and organizational capital, this paper considers employee costs as a measure of human capital and sales revenue as an indicator of customer relation. The third perspective in the Value platform model of intellectual capital measuring, management and reporting is organizational or structural capital. This is the most organized part of Intellectual Capital that constitutes patents, copyrights, and trademarks. Though there is a lot of debate on such intangible knowledge acquisition through employee training and Research and Development costs, as to how much of the training is used for creation of intellectual capital and how much goes in the building of personal capital of the employee. People are the only true agents in business, all assets, whether tangible physical products or intangible relations are the result of human action and depend on people for their continued existence. Such competence cannot be owned by anyone or anything but the person who possesses them, because employees are voluntary members of an organization. It may, therefore be argued that employees are trained and Research and Development costs incurred to generate intellectual capital. And there is reason to include such intellectual capital in the balance sheet. But what is to be included in the balance sheet has to be measured in monetary terms.

## The IT Sector and Intellectual Capital

The new knowledge based economy has paved the way for many new companies in the area of information technology (IT), which are basically knowledge-based companies. The advent of these companies has brought into light the limitations of conventional financial statements. The financial statements using traditional methods fail to disclose the true value of an organization, and overlook the fact that the core assets of theses knowledge based companies are intangible in nature. The existing guidelines are not much of help. For instance, it is difficult to understand from the conventional financial statements, why the stocks of some IT companies are trading at many times higher than their earning per share? Businesses are often worth far more than the sum of their fixed assets and working capital; there are intangible assets as well which may not be reported in traditional financial statements. Here comes the role of intellectual capital reporting.

The high stock market premiums on today's stock market can be one of the indications of an emerging new knowledge economy. The true value of a knowledge company is not found in financial ratios like PE ratio or ROE, but in intellectual capital.

## 5. MEASUREMENT OF INTELLECTUAL CAPITAL: REVIEW OF AVAILABLE MODELS

At this junction it would probably be meaningful to glance at the different available methods of valuation and measurement of intellectual capital that deserve special mention in the field of research on intellectual capital. Some of them that draw the attention of researchers are: Skandia Navigator of Lief Edvinsson, the IC-Index method which was first developed by Goran Roos, Technology Broker's IC audit method of Annie Brooking and the Intangible Asset Monitor, the brain child of Karl-Erik Sveiby. To name a few others we may recall, the more contemporary Calculated Intangible Value, Intangibles Scoreboard of Baruch Lev, Balanced Scorecard method as pioneered by Kaplan & Norton, Tobin's q method and Market-to-book value method.

*Skandia Navigator*: Skandia is considered the first large company to have made a truly coherent effort in measuring knowledge assets (Bontis 1996; Huseman and Goodman, 1999). They first developed its Intellectual Capital report internally in 1985 and became the first company to issue an Intellectual Capital addendum accompanying its traditional financial report to shareholders in 1994. Lief Edvinson the chief architect behind Skandia's initiatives developed a dynamic and holistic Intellectual Capital reporting model called the Navigator with five areas of focus: financial, customer, process, renewal and development and human capital. This new accounting taxonomy sought to identify the roots of a company's value by measuring hidden dynamic factors that underlie "the visible company of buildings and products" (Edvinsson and Malone, 1997).

According to Skandia's model the hidden factors of human and structural capital when added together comprise intellectual capital. This model contains both financial and non-financial building blocks that combine to estimate the company's market value. The Skandia Intellectual Capital report uses upto 91 IC metrics to measure the areas of focus making up the Navigator model. For example, the financial focus is measured with the help of measures like revenues/employee ($). Again, days spent visiting customers, number of customers gained versus lost focuses on the customer base and personal computers per employee, IT capacity-CPU determine the process focus and satisfied employee index; average age of patents are used to measure the renewal and development focus. Again the human focus is measured by metrics like managers with advanced degrees, annual turnover of staff.

Skandia's considerable efforts to create taxonomy to measure a company's intangible assets have emboldened others to look beyond traditional assumptions of what creates value for organizations. Skandia's model is particularly impressive in recognizing the role of customer capital in creating value for an organization. Skandia also provides a broad coverage of organizational structural and process factors with its focus on process and renewal and development contributions to organizational value that has not been attempted before. In Skandia's model the value of the intangible assets is capable of accounting for the significant widening gap between the value of an enterprise stated in the corporate balance sheet and the investor's assessment of those values as reflected in the enterprise's market value.

However the method has been criticized on the grounds that Skandia follows a balance sheet approach when measuring its intangible assets, it offers only a snapshot in time and cannot represent dynamic flows of an organization. Skandia offers no dollar value to its intellectual capital, but uses proxy measures of intellectual capital to track trends in the assumed value added.

*The IC-Index*: The notion of an IC-Index was first advanced by Goran Roos and his colleagues at Intellectual Capital Services Ltd. and was used by Skandia in its 1997 in its Intellectual Capital supplement to the annual report. The IC-Index is an example of "second generation" practices that attempts to consolidate all the different individual indicators into a single index and to correlate the changes in intellectual capital with changes in the market. These second generation practices still seek to improve the visualization of the value creating process of the company so that they can be managed comprehensively but in effect create a bottom-line for Intellectual Capital. This synthesis allows managers to assess the Intellectual Capital situation of a company holistically, whereas the first generation practices give information only on the single components of Intellectual Capital. A summary index further provides an immediate improvement to having long lists of individual indicators because it requires companies to understand the priorities and relationships that exist between their different measures.

The IC-Index has several distinct features:

- It is an idiosyncratic measure.
- It focuses on the monitoring of the dynamics of Intellectual Capital.
- It is capable of taking into account performance from prior periods.

- It sheds light on a company different from an external view typically based on an examination of physical assets.
- It is a self correcting index, in that, if performance of the IC-Index does not reflect changes of the market value of the company, then the choice of capital forms, weights, and/or indicators is flawed.

The IC-Index is context specific because it permits boundaries to be placed around the measurement of Intellectual Capital. Being an idiosyncratic measure it also permits any Intellectual Capital metric to have maximum relevance for an organization. The specific measurement of company Intellectual Capital forms, weightings, and indicators can also be decided by knowing the company's strategy, characteristics of the particular business of the company, and its day-to-day operations.

But an IC-Index being context specific is therefore limited in its universality among companies. Definitions, strategic prioritizing, choice of indicators, etc. all make comparisons of any absolute IC-Index summary value calculated for different companies or over time by one company is meaningless. In addition, because only proxy measures are taken of Intellectual Capital stock, all metrics are dimensionless, ordinal numbers. As a result, the value of an IC-Index continues to lie in its measurement of changes in Intellectual Capital stocks i.e., IC flow. This stock-flow perspective is quite powerful for researchers since they can examine firms as organizational learning systems, which try to minimize stock-flow misalignment. The changes in an IC-Index therefore reflect changes in the underlying IC elements, that in turn signal changes in the underlying drivers of future earning potential.

*Technology Broker's IC audit*: Annie Brooking (1996) makes a practical contribution to Intellectual Capital measurement by offering three measurement models to help calculate the dollar value of Intellectual Capital. Intellectual Capital is defined as the combined amalgam of these four components: market assets, human-centred assets, intellectual property assets and infrastructure assets. Market assets equal the potential an organization has due to market-related intangibles such as brands, customers, repeat business, backlog, distribution channels, contracts and agreements such as licensing and franchises. Human-centered assets are the collective expertise, creative and problem-solving capability, leadership, entrepreneurial and managerial skills embodied by employees of the organization. Intellectual property assets contain the legal mechanism for protecting many corporate assets, and infrastructure assets including know-how, trade secrets, copyright, patent and various design rights, trade and service marks. Finally, infrastructure assets equal those technologies, methodologies and processes which enable the organization to function including corporate culture, methodologies for assessing risk, methods of managing a sales force, financial structure, databases of information on the market or customers, and communication systems.

This method begins the diagnostic process by having the organization answer twenty questions that make up the Intellectual Capital indicator. The results of this test suggest that the less a company is able to answer in the affirmative to the 20 questions, the more it needs to focus on strengthening it's intellectual capital.

Brooking offers three methods to calculate a money value for the IC identified by the audit:

- the cost approach, which is based on assessment of replacement cost of the asset;
- the market approach, which uses market comparables to assess value; and
- the income approach, which assesses the income-producing capability of the asset (i.e., the NPV of its net cash benefits)

This method has been lauded for offering a toolbox for organizations to assign value to Intellectual Capital. It is said to have created an Intellectual Capital audit that itself represents an intellectual asset for organizations. Moreover, the instrument and its conceptual basis have served to identify, value, and leverage the Intellectual Capital in many organizations. The main weakness in these items is that there is a considerable leap that must be made from the qualitative results of the questionnaire to actual money values for these assets. Being a market-based valuation method, it suffers from a lack of efficient market-based prices for many elements of IC. Finally, the income-based model suffers from subjectivity of estimations and uncertainties inherent in a cash-flow model.

*Intangible Asset Monitor*: Karl-Erik Sveiby (1997) believes that difficulties in measuring intangible assets can be overcome. He foresees an intangible model as clearly understood as that of an organization's book value equal to tangible assets minus visible debt. Key to such a system is having a coherent conceptual framework, but to do this, there is a need to stop money being used as a proxy for human effort. Sveiby proposes a conceptual framework based on three families of intangible assets: external structure (brands, customer and supplier relations); internal structure (the organization: management, legal structure, manual systems, attitudes, Research and Development, software); and individual competence (education, experience). While efficiency of the internal structure or "operational efficiency" of an organization has historically been part of most traditional accounting measurement, the other two intangible assets in his model are not. Sveiby believes that the problem with using measures of these two assets is not that they are difficult to design; rather their outcomes seem difficult to interpret as they correlate with changes in business performance. This model recommends replacing the traditional accounting framework with a new framework that contains a *knowledge* perspective. Within this framework, both *non-financial* measures measuring intangible assets, and *financial* measures measuring visible equity can be jointly used to provide a complete indication of financial success and shareholder value. There are three indicators of intangible assets, namely external structure (brands, customer and supplier relations), internal structure (management, legal structure, manual systems, Research and Development, software) and individual competence (education, experience). The purpose of measuring these three indicators of intangible assets is to provide management control. *External parties* are usually interested in a company's position versus changes and flows, given that external accounts are provided only at relatively lengthy intervals. As a result, Sveiby recommends that management information given to the external parties about a company's intangible assets should include key indicators and an explanatory text (because it is not possible to compile a full balance sheet that expresses in monetary terms all the intangible assets of a company). *Internal measurement* on the other hand, is undertaken for management which needs to know as much as possible about the company so that it can monitor its progress and take corrective action when needed. It, in fact becomes a management information system. Since business today in a constant state of flux, management information should emphasize flow, trends, change, and control figures. Managers are more likely to be concerned with the speed with which intangible assets are measured than with accuracy. Though it is a fact that business cycles have shortened, the measurement of intangible assets should include at least three measurement cycles in order to evaluate results, and repeated yearly.

The paper really does not base its regression on the Intangible Asset Monitor inspite of this being one of the most popular and less criticized methods, because most companies in the IT sector (the Sector being studied here) do not report data on Research and Development and brand value.

*Calculated Intangible Value Method*: The Calculated Intangible Value Method has been developed by the Kellogg School of Business at Northwestern University. The method is based on the return on assets concept (ROA). It uses the average pre-tax earnings of a company for three to five years. This average earning is then divided by the average tangible assets of the company over the same period of time. The resulting ROA is compared with the company's industry average to calculate the difference. This excess ROA is then multiplied by the company's average tangible assets to calculate an average annual excess earning. Dividing this by the cost of capital of the company yields the Intellectual Capital. The best part of this method is that it allows intangibles to be measured using standard audited financial data. It measures a company's ability to out-perform other companies in its industry and is criticized on the ground that it is not practical to consider Intellectual Capital as the only alternative of performance. Again the investment cycle of a firm can be, for a period, out of line of its industry. This situation is not related to intangibles assets and should not interfere with their valuation. Tax and depreciation policies may introduce two additional biases regarding the amount of the pretax earning which affects the ROA. However, the major problem lies in the fact that the method seems to ignore the posting of intangibles assets. Most of them are accounted for expenses and consequently reduce the pretax earning. Taking into account this inescapable fact, it seems quite specious to say that intangibles assets might contribute- if not in an indirect way - to the pretax earning enhancement and further to an *excess* rate of ROA. Therefore it can be said that the Calculated Intangible Value Method does not measure the value of intangibles assets but rather gives a possible appreciation of the firm's investments profitability within its industry. It can be used as a tool for benchmarking performances of its whole assets.

*Value Chain Score Card*: Lev's value Chain Score Card proposed by Baruch Lev is primarily geared to provide individual investors and partners networked to the firm with the information at the level of professional investors and managers. It is a matrix of non-financial indicators. The Value Chain Scoreboard classifies metrics into the cycle of product development and commercialization. Product development includes Discovery/Learning that is measures on internal renewal, acquired capabilities and networking and Implementation which comprises metrics of intellectual property, technological feasibility and the Internet. Commercialisation includes measures of customers, performance and growth prospects.

*Balanced Scorecard*: An increasingly popular and widely adopted approach to measuring an organization's performance is the Balanced Scorecard. It is being widely adopted in knowledge based corporations. The advantage of this approach in knowledge management terms is that it directly links learning to process performance, which in turn is linked with overall organizational performance. Developed by Kaplan and Norton, the balanced scorecard focuses on linking an organization's strategy and objectives to measures from four key perspectives: financial, customers, internal processes, and learning and growth. In contrast to traditional accounting measures, the Balanced Scorecard shifts the focus from purely financial measures to include key measures of intangible success factors. These, roughly equate to the three components of Intellectual Capital – namely human capital (learning), structural capital (processes), and customer capital. The 'balance' of the Scorecard is between the external measures for shareholders and customers, and internal measures of critical business processes, innovation, and learning and growth. A 'balance' also exists between relatively objective outcome measures and subjective, judgemental measures of the performance drivers of Intellectual Capital.

The Balanced Scorecard collects the results of human activity over time and expresses them for both internal and external measures. Since the BSC compares actual results to predetermined targets, it has a reporting or historic orientation. The Balanced Scorecard can include stock and flow measures or both. The determination of the measures and the types used is expected to be a function of the management's interpretation of the firm's strategy.

*Tobin's Q method*: A ratio devised by James Tobin of Yale University, who hypothesized that the combined market value of all the companies on the stock market should be about equal to their replacement costs. The Q ratio is calculated as the market value of a company divided by the replacement value of the firm's assets:

$$\textbf{Q Ratio} = \frac{\textbf{Total Market Value of Firm}}{\textbf{Total Asset Value}}$$

The Tobin's q compares, through a ratio, the market value of the firm to the replacement cost of its total assets. This ratio is a better than the market-to-book ratio because it neutralizes the effects of different depreciation policies. The more the ratio is above one, the more the firm shows strong returns on its investments. If the replacement cost of a company's assets is lower than its market value, then the company is getting monopoly revenues, or higher than normal returns on its investment.

The Tobin's q is subject to the same exogenous variables that influence market price as well as the market-to-book method described above. This method is best suited to make comparisons of the value of firms' intangible assets within the same industry, serving the same markets, and having similar tangible assets.

*Market-to-book value method*: According to this method, value of the firm's intellectual capital is the difference between the book value and market value of the firm. The plus point of this approach lies in its simplicity of quantifying this intangible asset. The market to book value method considers all the reported assets at their book value and compares them to the market value of the firm. The present day accounting practice does not value the firm as a total entity. Instead it values each asset under the appropriate accounting standards like historical cost and replacement cost. The market on the other hand, values a company in its entirety as a going concern. So the market to book value method tries to iron out this difference by using a simple measure of intellectual capital. This method, however, suffers from inaccuracy, as the book value reflected in financial statements may not represent the true value.

In this paper an attempt has been made to evaluate the monetary value of intellectual capital using the simplest conventional method of market value minus book value. This method was advocated by Sveiby who assumed that if investors consider the market value of the company being 100, although the book value is only a portion of this value, the difference lies in the intangible assets value. The methodology is criticized by many authors like Upton, who regard this method as circular and provides little feedback information to users of financial and business reporting information (Upton, 2001). However this method is chosen since the other methods require detailed information of the company, which is not available from the published annual reports of IT companies presently operating in India.

## 6. THE CASE STUDY

A set of data from the records of the Infosys Technologies Ltd. and the market capitalization value (as available from records of BSE) have been used to prepare the following Table 1. The market capitalization of the company is determined by multiplying the market price of its stock by the number of shares issued by the company on the date of closing the books for the relevant years. Considering the accounting information available from secondary data of Infosys Technologies Ltd for the five-year period 2000-01 to 2004-05, we observe that the market capitalization far outweighs the visible components of the balance sheet. This is conceptualized as the Intellectual Capital of the company (Table 1, Row 6)

Over the years for which data has been studied it is found that equity earns a very high return, yielding 200 to 500 per cent equity dividend. (Table 1, Row 1) Such high ROE is not uncommon to knowledge companies. This brings to light that some other aspect, besides the 'visible' equity, which creates such high returns is missing in theses reported results. It is therefore, indicated that equity is understated and the cause behind such high returns is, in all probability, the much talked about intellectual capital. Such an 'invisible equity' is expected to be the cause behind significant difference between the book value and the market value of the company. The market value is considered to be the shareholders' perception of the value of such invisible equity.

From the data set, it may be observed that intellectual capital, which has been calculated as market value minus book value (or net worth) is found to have gone up by 109 per cent in this five-year period. In this case Net Worth / No of equity shares issued = Book Value per share (Table 1, Row 2, 3 and 4). As per the techniques used here market value (Row 5) minus book value (or Net worth i.e. Row 2) is the Intellectual Capital (Row 6) of the firm.

During the same period rise in sales is observed to be 2.61 per cent only (Table 1, Row 7) and employee costs have gone up by 3.44 per cent (Table 1, Row 8). Following previous discussion, these figures focus on the idea that the creation of intellectual capital reflects the economic concept of total factor productivity. The contribution of human capital (in terms of firm's ability to extract best solutions from employees), customer capital (reflected in sales base, the firm's relationship or network of associates and their loyalty to the company) and organisational capital (in terms of patents, and other organized forms of intellectual assets which are part of the firm's capabilities to meet market requirements) towards creation of intellectual capital is noted. Overall we can say that the company has been successful in synergizing its employee cost and value addition per employee towards creation of an admirable intellectual capital, which has commanded a huge market capitalization.

Such premium market capitalization may also be related to the more than 200 per cent increase in PAT over the period under review (Table1, Row 9). The fact that employees (Row 11) have had a significant role to play in the intellectual capital of the firm and its impact on market capitalization may also be observed in the figures showing value addition per employee. Value addition per employee (Table 1, Row 12) is defined as net revenues from software related business less all costs attributable to employees divided by the average number of employees. Net revenues from software include revenues from related businesses like education and training and software trading. Manpower costs include salaries, bonus, incentives, contribution to provident fund and other funds, staff welfare expenses, and recruitment and training expenses. Average number of employees has been calculated by the average number of employees at the beginning and year-end (Row 11).

From the available information of the selected company, we have tried to relate the extent to which employee training and development costs have been able to influence the value of intellectual capital so calculated. This is rationalized by the fact that Indian IT companies have been facing very high employee costs in the form of salaries and research and development. Although employee costs are growing, most of the companies have managed to increase the revenues at a faster rate leading to value added.

The above discussed figures are plotted on a line diagram (Figure 1) to give a pictorial idea that the intellectual capital has grown at a much faster than the growth in sales or the monetary resources spent on employee development and welfare. This is another way in which we justify the invisible role of the intellectual capital in enhancing the market value of the firm. It is evident that the employee costs have been steadily increasing, albeit following the trend of increasing number of employees, over the five-year period for which the line diagram has been done. Though in the first two years, the rise in employee costs have not closely followed rise in the value of intellectual capital, which may be explained by the fact that the effect of company's welfare, research and training measures cannot be expected to reap benefits overnight. Most logically, therefore, the rise in intellectual capital in GP terms is observed from 2003-04. At the same time, market base being a component of intellectual capital, is considered here in terms of sales. Here, too the rise in intellectual capital is found to be favourably inclined post 2003-04. Before that, the intellectual capital was found to be rising almost at the same rate as that of increase in customer base.

In addition to this, an attempt has been made to run a regression equation with intellectual capital as the dependent variable and employee costs and sales as independent variables. The proposed model takes the following form:

$y = f(x_1, x_2)$ where $x_1$ = employee cost, $x_2$ = turnover as recognized in the reports of the companies.

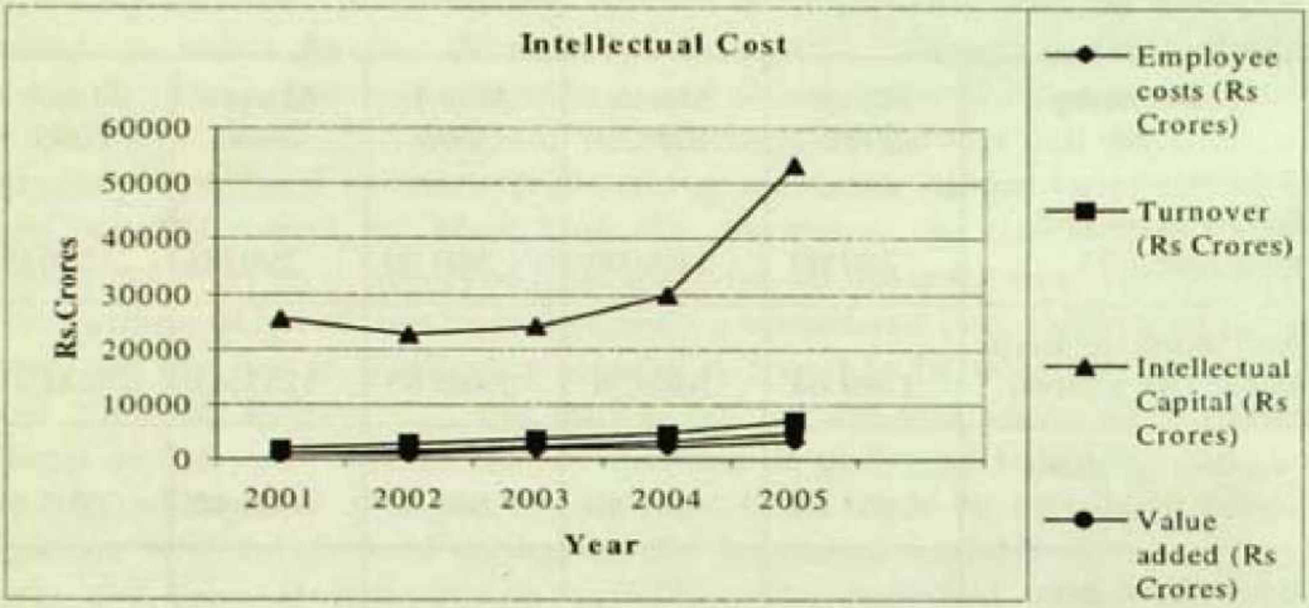
The simple correlation regression between intellectual capital and turnover is strong (0.889) but that between intellectual capital and employee cost is weak (0.111). On further calculation of multiple correlation, we find that employee cost and turnover jointly, influence intellectual capital (where r is 0.8926) significantly. The probable reason behind this is that the data being available for only five years poses a major limitation in calculating effect of investment in employees on intellectual capital. It may be logically taken for granted that incurring expenditure on employee development, training (which is an important element of employee cost) would not have direct incremental effects in the same year. Rather, it takes time to influence intellectual capital. That is the expected reason behind the regression results mentioned above. The line diagram shown below substantiates this fact.

The regression results lead us to look deeper into the impact of sales over intellectual capital, where employee cost is constant, by calculating partial correlation. The results (regression coefficient 0.8912) show as expected, that sales are a major influencing factor on intellectual capital and corroborates the fact that the influence of the variable employee costs is low in the present data set.

## Table 1
## Selected Financial Results of Infosys Technologies Ltd.

| Year ending | March 2001 | March 2002 | March 2003 | March 2004 | March 2005 |
|---|---|---|---|---|---|
| Equity Dividend per share (%) | 200.00 | 400.00 | 540.00 | 290.00 | 230.00 |
| Net Worth or Book Value (Rs Crores) | 1389.64 | 2080.31 | 2860.65 | 3253.43 | 5241.73 |
| Number of shares issued (Lakhs) | 661.60 | 661.80 | 662.40 | 666.40 | 2705.80 |
| Book value per share (Rs) | 210.04 | 314.34 | 431.86 | 488.21 | 193.72 |
| Market Value (Rs Crores) as per BSE | 27012.00 | 24714.00 | 26847.00 | 32909.00 | 58798.00 |
| Intellectual Capital (Rs Crores) i.e. Market Value minus Book Value or net worth | 25622.36 | 22633.69 | 23986.35 | 29655.57 | 53556.27 |
| Turnover (Rs Crores) | 1900.57 | 2603.59 | 3622.69 | 4760.89 | 6859.66 |
| Employee costs (Rs Crores) | 715.17 | 1114.58 | 1671.00 | 2362.64 | 3177.53 |
| PAT (Rs Crores) | 628.81 | 807.96 | 957.93 | 1243.47 | 1904.38 |
| Value added (Rs Crores) | 1150.43 | 1565.25 | 2379.92 | 3186.16 | 4533.46 |
| Number of Employees | 9831 | 10738 | 15356 | 25634 | 36750 |
| Value Addition per employee (Rs. Crores) | 0.1170 | 0.1457 | 0.1549 | 0.1243 | 0.1234 |

Figure 1



## 7. LIMITATIONS

Employee costs are not expected to yield benefits in the form of increase in human capital in the same year in which such costs are incurred. In addition, employee costs include basically two aspects, viz. maintenance factor, which may include basic salaries and improvement factors, which provide the encouragement to the employee to be motivated enough, to be creative and generate enough value to the company so that market value of the company is enhanced.

A limitation of this case study is the use of the simplistic model for valuation of Intellectual Capital, which has its inherent constraints. The data is collected from a company, which has no recorded expenses on Research and Development and patents, copyrights etc.

In addition, the regression results though found to be encouraging to the hypothesis, use data for a five-year period only. For a conclusive statistical analysis the period of five years is too short. But it is to be borne in mind that the information and technology industry itself is young, being too early to predict a situation.

## 8. CONCLUSION

The present accounting system grossly understates the real value of assets and thus gives a skewed picture for knowledge-based companies, which have small traditional assets. If the measurement, disclosure and audit of Intellectual Capital are undertaken in India the corporate can reap advantages by analyzing their capabilities and developing on their strengths. This will have a long-term positive impact on the companies, which are of late competing on the global front. Intellectual capital looks beyond to more ineffable assets such as the ability of the company to learn and adapt. In its empirical dimension, the paper has calculated the Intellectual Capital of the software giant Infosys Technogies Ltd. based on the data for three years. Following this, a quantitative relation between its primary drivers and Intellectual Capital have been attempted to be established.

This paper can be extended to evaluate the influence of the three variables, human, market and organizational on the Intellectual Capital. The augmented model may take the form

$y = f(x_1, x_2, x_3)$ where $x_1$ = employee cost, $x_2$ = turnover and $x_3$=value of patent, copyrights as recognized in the reports of the companies.

The model can be best explained with data from the other software giants in the Indian scenario like Wipro, TCS and Polaris, which may provide us with an idea about the contribution of Intellectual Capital towards the performance of the organization vis-à-vis industry.

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# Transfer Pricing and e-Commerce : Some Issues

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## Abstract

The paper attempts to deal with different issues relating to transfer pricing at international level. Challenges posed by e-commerce and the provision of Advance Pricing Arrangement as a solution have also been analysed in the paper.

***Key words*** : Penultimate; Over and Under-invoicing; Arm's Length Price; Dematerialisation

## 1. INTRODUCTION

Transfer Pricing is a business practice adopted by enterprises having multidivisional structure, for charging prices for transfering goods and properties or rendering services by one division to another of the same enterprise. 'Goods and properties' include both tangible and intangible ones. The price at which it is exchanged between the divisions involved in the transfer-transaction becomes revenue of the transferor division and costs to the transferee division. Naturally, it would affect the profitabilities of both the divisions. It needs no mention that the overall profitability of the enterprise is non-responsive to the transfer pricing issues at the domestic level. It can be very easily examined from the following very simplified hypothetical example:

An enterprise (E) is having two divisions - A and B. Goods procured or manufactured by division A cost Rs. 60. Goods are transferred at a transfer price (TP) by division A to division B which sells the goods in the market at a selling price (SP) of Rs. 100. The effects of the use of different transfer prices on the pre-tax profitability of the divisions as well as of the enterprise as a whole are shown below in Table 1.

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Table 1

**Effects of Varying Transfer Prices on Profitability**

(Figures in Rs.)

| Transfer Price (TP) | Revenues | | | Costs | | | Profits | | |
|---|---|---|---|---|---|---|---|---|---|
| | A (TP) | B (SP) | E (SP) | A (Actual) | B (TP) | E (Actual) | A | B | E |
| 70 | 70 | 100 | 100 | 60 | 70 | 60 | 10 | 30 | 40 |
| 75 | 75 | 100 | 100 | 60 | 75 | 60 | 15 | 25 | 40 |
| 80 | 80 | 100 | 100 | 60 | 80 | 60 | 20 | 20 | 40 |
| 90 | 90 | 100 | 100 | 60 | 90 | 60 | 30 | 10 | 40 |

It appears from the Table that setting transfer price at a lower or a higher level just shapes the distribution pattern of the profits between the divisions and does not have any effect on the overall pre-tax profitability of the enterprise.

Divisional profitability too will affect the divisions only when these are treated as profit centers. So long as the inter-divisional transfers do not transgress the national boundary, use of transfer pricing strategy by an enterprise remains merely an internal issue. The objectives of transfer pricing in those cases include divisional performance evaluation which is used for various internal managerial purposes like motivating divisional managers, rational allocation of resources amongst the divisions, etc.

In this paper a modest attempt is made to deal with different issues relating to transfer pricing at international level, intertwined with the e-commerce transactions. The deliberation is divided into six sections starting with 'Introduction' in the present section, followed by 'International Transfer Pricing and its Importance' in the second section. Legislations relating to transfer pricing are discussed in two subsequent sections: 'Legislation on International Transfer Pricing' in the third section and 'Transfer Pricing Legislation in India' in the fourth section. The analysis on 'E-Commerce and International Transfer Pricing' in the penultimate or the fifth section leads to 'Conclusion' in the last section.

## 2. INTERNATIONAL DIMENSION OF TRANSFER PRICING

The issue of transfer pricing gets a new dimension as soon as the transfer-transaction involves affiliates across the national boundary. An enterprise, which carries out its business operations in more than one country through a network of branches, divisions, subsidiaries, etc. is known as a Multinational Corporation or MNC (Mosich & Lason, 1983).The nature of transaction also gets changed from simple 'transfer' to 'export-import'. It then attracts the export and import duties of two different countries. Profits of the transferor and transferee divisions become chargeable to tax again in two different countries. It is most unlikely to expect uniform tax and duty tariffs in the countries involved in the transfer. As a result the total tax liability of an MNC for a specific amount of pre-tax profit may be different depending on the different distributions of the profit between the affiliates. It may be mentioned that setting higher prices on transfer will result in a higher profit in the transferor country and lower profit in the transferee country and *vice-versa*. In both the cases (setting higher or lower prices), the overall pre-tax profit of the MNC will remain the same. However, there is scope for minimizing the overall tax liability of an MNC by a judicious selection of a 'low-tax transferor country' and a corresponding 'high-tax transferee country' along with equally judicious setting of transfer price. This point can be clarified by extending the previous example. The following table (Table 2) presents the effects of different transfer prices on overall tax liability in cases of transfer between countries having different tax rates.

Table 2

**Effects of Varying Transfer Prices on Overall Tax Liability**

(Figures in Rs.)

| Transfer Price | Pre-tax Profits | | Tax Liabilities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Tax Rates: A-10%, B-40% | | | Tax Rates: A-40%, B-10% | | | Tax Rates: A-20%, B-30% | | |
| | A | B | A | B | Overall | A | B | Overall | A | B | Overall |
| 70 | 10 | 30 | 1.0 | 12 | 13.0 | 4.0 | 3.0 | 7.0 | 2.0 | 9.0 | 11.0 |
| 75 | 15 | 25 | 1.5 | 10 | 11.5 | 6.0 | 2.5 | 8.5 | 3.0 | 7.5 | 10.5 |
| 80 | 20 | 20 | 2.0 | 8.0 | 10.0 | 8.0 | 2.0 | 10.0 | 4.0 | 6.0 | 10.0 |
| 90 | 30 | 10 | 3.0 | 4.0 | 7.0 | 12.0 | 1.0 | 13.0 | 6.0 | 3.0 | 9.0 |

In fact, by adopting a strategy of setting a lower price in case of transfer from a high-tax country to a low-tax one and *vice-versa*, an MNC can siphon the desired portion of its profit to a low-tax country. Resultantly, only a smaller amount of total profit will attract tax at a higher rate and the larger part at a lower rate; the aggregate tax liability of the MNC is thus minimized.

### The Mechanism

The higher or lower transfer prices are actually executed by means of what are known as 'over-invoicing' and 'under-invoicing'. While over-invoicing costs more to an MNC in the form of customs duties (export duty in the transferor country and import duty in the transferee country), under-invoicing saves costs. So, under-invoicing (resorted to in case of transfer from a high-tax country) saves both the tax and the cost but over-invoicing (in case of transfer from a low tax country) acts to save tax and at the same time to increase cost. Thus, over-invoicing strategy may be advantageous only when tax saving exceeds cost-increment. Maximisation of global profit (net of tax) is the major motive behind adoption of transfer pricing mechanism by an MNC.

### Effects on Government Revenues

The above discussion is about only one side of the coin; the other side is related to the revenue interests of the governments of the countries involved in the transfer-transaction. On over-invoicing there will be revenue gain to the transferor-country in both the fronts - tax and duties, but the transferee-country has to suffer loss in tax revenue. On the other hand, under-invoicing gives rise to the gain only in the tax front of the transferee-country. The effects of over- and under-invoicing on the revenues of the countries involved in transfer-transaction may be summarized and shown in the tables below:

Table 3
**Effects of Transfer Pricing Strategy on the State Revenues of the Transferor Country**

| Transfer Pricing Strategy | Tax Rate in the Transferor Country | Effect on State Revenues | | Net Effect |
|---|---|---|---|---|
| | | Taxes | Duties | |
| Over-invoicing | Low | Gain | Gain | Gain |
| Under-invoicing | High | Loss | Loss | Loss |

Table 4

**Effects of Transfer Pricing Strategy on the State Revenues of the Transferee Country**

| **Transfer Pricing Strategy** | **Tax Rate in the Transferor Country** | **Effect on State Revenues** | | **Net Effect** |
|---|---|---|---|---|
| | | **Taxes** | **Duties** | |
| Over-invoicing | High | Loss | Gain | Loss<br>(When Loss > Gain) |
| Under-invoicing | Low | Gain | Loss | Gain<br>(When Gain > Loss) |

It may be reiterated that whenever a transfer pricing strategy – be it over-invoicing or under-invoicing – is adopted by an MNC it is surely for deriving gain (in most of the cases by minimizing tax liability) out of it. Following natural law, we can say that this gain must have a corresponding loss. It is also clear from the above tables that the loss is suffered either by the transferor country or by the transferee country. There is, therefore, every reason to believe that every transfer pricing transaction may have to face hostile behaviour from the national government of the losing country. This has actually given rise to serious thinking about how to check the use of transfer pricing mechanism of the MNCs to avoid tax. Ultimately, national governments of different countries have come up with code on transfer pricing. This is discussed in brief in the next section.

## Why so important?

Transfer pricing issues have gained momentum in the recent times. The major factors behind putting so much importance to this issue may be summarized below:

(i) *Much relevance to MNCs:* From the discussion above, it is apparent that transfer pricing becomes an issue only when the locations of the affiliates fall in two different countries and that occasion is very common for an MNC. In the liberalized scenario throughout the globe, there is tremendous growth of MNC operations. Globally, over 60% of transactions do occur between associated enterprises and for the first time (in 2003-2004) 500-600 multinationals have come under transfer pricing scrutiny in India (Internet, 1).

(ii) *Scope to reduce global tax liability of the MNCs:* Much of the interest of the MNCs in transfer pricing is due to the latter's potential in providing scope to reduce global tax liability. The other considerations include repatriation of profit, avoiding exchange control, etc.

(iii) *Revenue interest of the national governments:* The national governments of different countries are interested in transfer pricing (more in the regulations for it) since it has the potential to impact the tax and duty revenues of the governments. For example, the Income Tax department in India issued additional tax demands on international companies of more than 400 m rupees ($ 9.13 m) in the first full year of introduction of transfer pricing laws in 2001(Internet, 2).

(iv) *Protection to MNCs from paying Double Taxes on same income:* "Transfer pricing can deprive governments of their fair share of taxes from global corporations and expose multinationals to possible double taxation....... Since it is a group it is liable to tax in the countries where it operates and in dealing with two different tax authorities it cannot just cancel one out against the other. Nor should it pay the tax twice"(Neighbour, 2002). A company is taxed following either of the two rules: 'Residence rule' and 'Source rule'. Under the former, a taxpayer is taxed in the country of residence for its worldwide income. A company may also be taxed in a foreign country for any recognized source of income in that country. Thus it requires existence of a 'Permanent Establishment' (discussed latter) of the company in the foreign country. Usually, a relief is given in the country of residence for any tax already paid in the source country. But this relief is not automatic; it depends on a treaty between the two countries on the issue. In the absence of such a treaty, there remains the scope for double taxation. Transfer pricing regulations can protect the MNCs from paying double taxes (Internet, 3).

(v) *MNCs wanting to avoid the risk of facing tax audit:* No government of any country is ready to swallow the activities of the MNCs that act to erode the tax base of the country. Governments of different countries, therefore, keep a stringent vigilance over such activities of the MNCs so much so that every audit in US starts with a question on transfer pricing (Internet, 2). The statistics of the Inland Revenue of the United Kingdom claim that for every one pound spent on investigations of transfer pricing, 120 pounds have been recovered in extra tax (Gandhi, 2001). The MNCs are, therefore, scared of the rigorous process of tax scrutiny and in turn remain very cautious about it so that they can avoid the tax audit.

## 3. LEGISLATIONS ON INTERNATIONAL TRANSFER PRICING

Basic guidelines on transfer pricing have been provided by the OECD (Organisation for Economic Co-operation and Development). The OECD guidelines suggested that transfer between ***'associated enterprises'*** should be at a price what is known as ***'arm's length price' (ALP).*** Foreign countries like USA, Canada, UK, Japan, South Korea, Taiwan, Malaysia, etc. have introduced legislations on transfer pricing. For example, Section 482 of the Internal Revenue Code of US, Sections 770-773 of the Income and Corporation Taxes Act of U.K., Article 66-5 of the Special Taxation Measures Law and the Special Taxation Law relating to Tax Treaty of Japan, Section 69 of the Income Tax Act of Canada, etc. deal with the transfer pricing issues in the respective countries. The Transfer Pricing Regulations have been published in Germany in 1983, in Japan in 1986, in South Korea in 1996, in Malaysia in 2003, and in Australia (detailed rulings) in 1994. Apart from these, Argentina, Denmark, Russia, Belgium, China, South Africa, etc. have introduced transfer pricing rules or detailed guidelines in some form or the other.

Before proceeding further let us have a quick look through the important and common terms used in almost all the legislations on transfer pricing in different countries. However, these are discussed here in the context of legislations in India.

### The Terminologies

(i) *Associated Enterprises (AE):* An enterprise is considered to be an associate of another enterprise if it has some sort of direct or indirect participation in management, control or capital (ownership) of the other enterprise. Two enterprises may also be considered to have 'association' if there are common persons having above kinds of participation in both the enterprises. The definition of 'associated enterprises' also includes situations in which an enterprise may be regarded as 'deemed associate enterprise'. There are a host of conditions relating to sharing of voting power, inter-enterprise loan, guarantee in borrowing, appointment of members in the governing body, etc. The fulfillment of only one of such conditions for a deemed associate enterprise may be sufficient for an enterprise to be regarded as an associated enterprise. The concept of 'associated enterprise' is important in judging whether the price applied in a transaction is fixed in uncontrolled situation and is free from any influence exercised by either party.

(ii) *International Transaction:* Any transaction across the border between Associated Enterprises in any kind of property – tangible or intangible, or in the provision of services, borrowing or lending money, sharing cost, contribution or expense or any transaction having a bearing on profits, income, losses or assets, is known as international transaction. At least one of the parties to the transaction must be a non-resident in a country in which the internationality of the transaction is judged. As discussed earlier, the transfer pricing issues remain to be internal affairs only so long as the transaction is not of international character. It is presumably for this reason that the transfer pricing legislations are applicable only in cases of international transactions.

(iii) *Permanent Establishment:* A division or unit of an enterprise in a location (meaningfully in a foreign country in the context of transfer pricing) is regarded to be a permanent establishment of the enterprise if such division or unit is a *fixed place of business* through which the business of the enterprise is wholly or partly carried on. The jurisdiction of taxing the profit in an international transaction is determined largely by the concept of 'permanent establishment'. Under article VII of the OECD Model Tax Convention, a person or an enterprise resident in a country may be taxed in another country only on income attributable to permanent establishment in the latter country (Internet, 4).

(iv) *Arm's Length Price (ALP):* A price that is applied in uncontrolled conditions in a transaction between parties other than associated enterprises is defined as an arm's length price or ALP. A fair transfer price in an international transaction between related parties (associated enterprises) is determined by applying the principle of ALP. The arm's length principle uses the behaviour of independent parties as a guide or benchmark to determine how incomes and expenses are allocated in international dealings between related parties. It involves comparing what a business has done and what a truly independent party would have done in the same or similar circumstances (ITP, Australia). The notion of an arm's length price ..... is especially germane to host governments sensitive to anticompetitive practices associated with artificial transfer prices" (Choi & Muller, 1992).

## 4. TRANSFER PRICING LEGISLATIONS IN INDIA

Transfer Pricing Regulations (TPR) have been introduced in India by amendment of certain provisions of the Income Tax Act, 1961, in the Finance Act, 2001, that came into effect from 1st April 2001 corresponding to the Assessment year 2002–2003. The sections of the I. T. Act that deal with TPR are Sections 92 to 92 F read with Rules 10 A to 10 E and Sections 271(1)(C), 271 AA, 271 BA, and 271 G. The provisions of the sections are largely based on the methods and principles set forth in the OECD Report on *'Transfer pricing and Multinational Enterprises'*. Sections 92 to 92F provide for the basics of TPR and the Rules 10A to 10E mainly deal with the procedural aspects. For example, Rule 10A specifies the criteria for determining AE, Rule 10B explains in detail the methods of determining ALP, Rule 10C prescribes the criteria for selecting the appropriate method of determining ALP, and so on. Similarly, Section 271 and its sub-sections provide for the penalty aspects for non-compliance or mis-deeds. It is worth mentioning that certain amendments were brought in the TPR through the Finance Act, 2002 to bring in more clarity and removing confusions besides widening the tax base (Internet, 5). A detailed discussion on the various provisions as stated above is dispensed with since that is beyond the limited scope of this paper.

Section 92C prescribes the methods of determining ALP; out of which the most appropriate one is to be selected. The prescribed methods are:

(i) *Comparable Uncontrolled Price Method (CUPM):* Under this method the price, which is 'comparable' to the price in a sale in 'uncontrolled' situation, is accepted as the appropriate transfer price for a transaction between AEs. The sale, the price of which is accepted as the transfer price, should be truly comparable to the transfer transaction in every respect and the parties in the sale i.e., the buyer and the seller should be unrelated.

(ii) *Resale Price Method (RPM):* In this method, the price in the resale transaction by the transferee to its customer forms the basis of the transfer price. The resale price is, however, to be adjusted (reduced) with the appropriate percentage for the mark-up and also for the value addition, if any, effected by the transferee on the transferred goods or services.

(iii) *Cost Price Method (CPM):* Here, costs incurred by the transferor for production of goods or for rendering services form the basis. The cost is, however, to be adjusted by multiplying it by an appropriate gross profit percentage for the functions the transferor unit carries out. The gross profit percentage can be determined from the similar sale-transaction to unrelated parties.

(iv) *Profit Split Method (PSM):* This method requires identification of the combined net profit in the transfer transaction, which is then split off between the parties (transferor and transferee) on the bases like activities performed, assets employed, risks assumed by each party, etc. with a comparison of valuation of such activities done by unrelated enterprises on a comparable basis (ICWAI). This method is suitable in case of provision of integrated services and where multiple interrelated transaction cannot be separately evaluated.

(v) *Transactional Net Margin Method (TNMM):* In case of transfer or sale of semi-finished goods or of provision of services to different customers, both related and unrelated, sometimes a method which is a hybrid of Cost Plus Method and Resale Price Method, is adopted; this is known as TNMM. Determination of ALP under this method involves a cumbersome process. The steps may be summarized below:

1. Identification of the revenues collected from each party — related and unrelated;
2. Distribution of total common or collected cost amongst all the parties on some suitable basis — costs incurred, sales effected, activities performed, assets employed, etc.;

3. Computing net margins for each party: (1-2);
4. Expressing aggregate net margin of all the unrelated parties as a percentage of aggregate distributed cost for the group; (3/2 x 100);
5. Computing mark-up value for the related party by applying the net margin percentage (for unrelated group) on the distributed cost of the related party;
6. Adding mark-up value to the distributed cost of the related party to have ALP.

Apart from the above five specified methods the TPR provides for application of any other method as may be prescribed by the Central Board of Direct Taxes in India.

## 5. E-COMMERCE AND INTERNATIONAL TRANSFER PRICING

### E-Commerce Transactions

The OECD defines E-Commerce as "commercial transactions involving both organizations and individuals, that are based upon the processing and transmission of digitized data, including text, sound, and visual images that are carried out over open networks (like the internet) or closed networks (like AOL or Minitel) that have a gateway onto an open network." The transactions in which offer and acceptance are through a network but delivery and payment are in traditional commerce are also included in e-commerce.

### Challenges posed by E-Commerce Transactions (Internet, 3)

Owing to the peculiar characteristics, E-Commerce (EC) transactions pose threat to TPR and consequently to the tax authorities of different countries. There is ample scope for these transactions to escape the imposition of any tax. Some such illustrative situations are presented below.

(i) *Lack of user control mechanism:* E-Commerce transactions lack any mechanism to control the users so that location of the activity can be identified. This identification of location becomes important where source-based tax system is in vogue. Easy scope for relocation of non-physical activities further aggravates the problem.

(ii) *Lacking means of user identification:* E-commerce transactions do not require (a) personification of the user, (b) use of the same computer for different transactions, and (c) use of computer in a permanent location. All these may create problem in identifying the actual user for imposition of tax.

(iii) *Abolition of intermediary functions and functionaries:* User identification problem is also jeopardised because of abolition of intermediaries in EC. Because I.T. authorities sometimes depend on such intermediaries imposing on them the responsibility of information reporting on the basis of which taxes may be imposed.

(iv) *Problems relating to identification of PE:*

(a) Use of modems, routers and other telecommunication equipments requires judging whether such use forms significant part of equipments necessary to carry on business activity. Affirmative response indicates constitution of PE.

(b) Whether mere existence of a web server in a location may be sufficient to attract PE clause is a matter of confusion.

(c) 'Dependent Agent' clause to constitute PE is relevant in case of Internet Service Providers (ISPs). A dependent agent is an agent who has to depend on the instruction of the principal for conclusion of the contracts. Naturally, independent agents do not come under the purview of PE.

(v) *Problems involving income characterization:*

(a) Income from allowing the computer facilities for searching a database or for downloading a document requires characterization of such income as income against sale, lease, provision of services, etc. Such characterization is important in determining the source of income particularly when source-based tax system is in vogue.

(b) There are some items like books, music, images, etc. which can be sold in both the forms – electronic and physical. Income characterization issue, whether a sale or a lease, is ensued in such cases also.

(c) Similar (to 'b' above) is the case of sale of software in which 'business connection', if any, in the transaction is sought to be identified.

(vi) *Problems relating to comparability of the transaction:* Transaction methods like Comparable Uncontrolled Price Method and Resale Price Method, for determining ALP, focus on the product or the technology (Report on TP, 2001). Application of these methods in turn is based on the identification of the truly comparable transactions in unrelated situations. Such identification is really a difficult proposition. Some such problems are noted below:

(a) Likely absence of accurate economic parallel activity in traditional commerce for comparison, e.g., in case of Web Portal Companies that provide e-commerce infrastructure;

(b) Dematerialisation activities which change the character of the property or service, e.g., conversion of a tangible property (a CD) to an intangible property (playing a CD for the music or the picture);

(c) Functional differentiation between the parties – functions may include concept design, R&D, manufacturing, assembling, servicing, purchasing, distribution, advertising, etc. The parties selected for comparison may involve different combinations of the above functions, which hamper comparability.

(d) Peculiar nature of the risks involved – rapid obsolescence, computer viruses, etc.

(vii) *Absence of any paper trail:* Traditional commerce transactions are almost always backed by paper trail, which is very much helpful in tracing out a transaction. Absence of paper trail in EC transactions makes them nearly impossible to be traced out.

**Analysing the E-Commerce Challenges**

Some of the challenges mentioned above may be analysed as follows.

(i) *Abolition of value adding intermediaries:* It may result in: (1) reduction of overall profits since contributions of the abolished functions will not be available; (2) price reduction since costs for the abolished functions may be avoided; (3) creation of problems to the tax administration in collecting information.

(ii) *Issue relating to existence of Web server:* Whether it constitutes PE depends on what function/s it undertakes. If it is only for advertising, it is not a PE; undertaking any further activity like taking orders, accepting payments, digitized delivery of goods, etc. would help constitute a PE. But the crux of the problem (before the tax authority) is that as soon as it is identified as a PE attracting tax imposition, it may be easily relocated in a tax haven or low tax country.

(iii) *Internet Service Provider issue:* ISP acts as an intermediary and hence not a dependent agent; therefore, it does not constitute PE.

(iv) *Searching a computer database or downloading a document:* OECD guideline prescribes application of residence rule (for the enterprise) to determine taxability in such cases; this is, however, so in the absence of any PE relationship.

(v) *Sale of software:* If the sale of software is a casual or an isolated transaction, no 'business connection' is established; but if continuity can be established in such transactions, a 'business connection' is established and hence it constitutes PE.

(vi) *Comparability issues:* Accepting nearly parallel and similar ones for comparison may make up absence of exact parallel or of functional similarity.

(vii) *Dematerialisation issue:* Control of such transactions may be left with the supplier. For example, a video-CD may be leased out for use by the lessee, rent being charged on the basis of time for which it is leased out, not on the basis of the output at the user's end.

## 6. CONCLUSION

### In Search of a Solution: Advance Pricing Arrangements

Many countries like US, UK, Australia, Japan, Germany, etc. have introduced 'Advance Pricing Arrangements' or APA to avoid many post-facto conflicts between the taxpayer and the tax authorities. "The aim of the Advance Pricing Arrangements (APA) program is to give businesses an opportunity to reach an agreement with the Tax Office on the future application of the arm's length principle in their international dealings with related parties, thereby resolving any uncertainty around these dealings" (ITP, Australia). APA may be either unilateral (agreement between the taxpayer and the tax authority of the national government) or bilateral (involving foreign tax authority also). Such agreement may remain valid for 3 to 5 years, after which it can, however, be renewed. APA helps eliminate uncertainties and also avoid costly and time-consuming dispute settlement mechanism.

The APA is, however, not a panacea. For example, it is a lengthy and complex process; unilateral agreement may not help avoid disputes with foreign tax authorities; all information disclosed under APA to the tax authorities might be available to the public (Internet, 6).

Though not an unmixed blessing, APA can be introduced by amendment of the TPR in India. IN the present context where e-commerce is considered to be the driver of present and future developments and where it is also considered as a potential to pose threat to revenues of the government, APA may at least bring some relief to the government.

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# Tax Implications of International Transfer Pricing

**Snehamay Bhattacharyya***

## Abstract

*International transfer pricing* drew the attention of the world economy because of the MNCs' desire to minimize tax liability by adopting *high mark-up or low mark-up* policy in a situation when governments of different countries charge tax at different rates. Such policies, besides reducing government's tax revenue, have their bearings on the interest of the company, the investors and the economy as well. To prevent the practice, the governments of different countries have framed laws to emphasise on adoption of *arm's length price*. The present paper is an overview of the implications of such policies on the country, the company, the investors and the economy as a whole, with suggestions for improvement.

***Key words*** : International Transfer Pricing; MNC; Manufacturing Affiliate; Distribution Affiliate; High Mark-up Policy; Low Mark-up Policy; Arm's Length Price.

## 1. INTRODUCTION

Globalisation has opened the gateway of the world economy to those who want to be the leaders in the field of their business operation. Their dream is not merely to play within the courtyard of their country of incorporation but to enjoy the game of profit maximization by taking advantage of the input and output markets located at different parts of the world. It is the multinational corporations [MNCs], which have spread their net all over the world, wherever they could find an entry, to reap the benefit of market economy. So their field of operation is not confined within the political boundary of the country in which they are incorporated but the area of operation is in any part of the world, which is suitable for expansion of their business. So in one country, where inputs of production are available at a cheaper price, they have set up the manufacturing affiliate [the subsidiary to act as a manufacturing unit] and in another country where output can be sold at a higher margin – a distribution affiliate [a subsidiary to act as a selling unit] is opened. As the cord to pull the net is in the hands of the person who has thrown it, the controlling power of an MNC is with the parent company in its country of incorporation.

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The present paper is a modest attempt to

- review the need for international transfer pricing,
- examine the tax implications of international transfer pricing practices,
- overview the regulatory framework relating to international transfer pricing in India and abroad, and
- suggest remedial measures to overcome the associated problems.

## 2. NEED FOR INTERNATIONAL TRANSFER PRICING

The need for transfer pricing [domestic transfer pricing] is there even when the manufacturing affiliate and the distribution affiliate are located within the same national economy, since the decision as to continuation or discontinuation of an affiliate is dependent on its real efficiency as measured by its profit generation ability. Consequently, the two main objectives of transfer pricing are profit maximisation and performance evaluation. But the need for international transfer pricing arises when the manufacturing affiliate and the distribution affiliate are located in two different countries. About 40 percent of all international trade consists of transfer between related business entities. The complex issue of determination of price at which goods, services and technology are to be traded between subsidiaries in different countries is the area of international transfer pricing.

Although profit maximisation and performance evaluation are the twin objectives of transfer pricing, in case of international transfer pricing performance evaluation is often considered a secondary objective and pushed to the back seat. As a result the most important goal of an MNC often becomes maximization of profit. In the area of corporate transfer pricing, it tries to achieve this goal by attaining the following objectives:

- Moving funds internationally
- Minimizing taxes
- Minimizing tariffs
- Avoiding exchange controls and quotas

- Minimizing foreign exchange risks
- Increasing share of profits from joint ventures

Out of these objectives, the present paper concentrates on the objective of minimization of tax.

## 3. TAX IMPLICATION OF INTERNATIONAL TRANSFER PRICING

As stated above, this pricing policy aims at maximization of profit and this profit maximization depends to a great extent on profit earned by subsidiaries. Now profits earned from subsidiaries consist of : 1) profit earned by the transferor subsidiary – the difference between the transfer price and the cost incurred by it, and 2) profit earned by the transferee subsidiary – the difference between the actual sale price and cost of the same to the transferee (transfer price for the transferor), i.e.,

Profit earned from subsidiaries =
Profit from transferor subsidiary +
Profit from transferee subsidiary

Profit from subsidiary = Revenue *less* Cost

Profit from transferor subsidiary = Transfer Price *less* Cost

Profit from transferee subsidiary =
Sale Price *less* (Transfer Price + Additional Cost)

The parent company may not be able to exercise much control on the revenue earned by the transferee, because the price is largely market driven. So the attention is more on the revenue of the transferor subsidiary (the transfer price), which depends on the policy of the parent company in this regard.

Again, profit earned by a subsidiary is affected by the tax law in operation in the country in which it is located. So realisation of the profit maximization objective of the parent company is largely dependent on the tax laws in operation in the countries in which its subsidiaries are located. Thus profit maximization is dependent on minimization of tax. For this reason minimization of tax is considered as one of the major objectives of international transfer pricing. Since the tax law of one country differs from that of another, minimization of tax through transfer pricing policy may be achieved by locating the transferor subsidiary in a *low-tax* country. But this advantage may not last for a long time because the tax law of a country often changes from time to time. Moreover, a low input-cost country may not be a *low-tax* country. So the policy for tax savings through transfer pricing that an MNC prefers to follow, is a manipulative one – a policy to evade tax by showing low income in a *high-tax* country and high income in a *low-tax* country. The adjectives *high-tax* and *low-tax* are used in the literature of international transfer pricing in relation to the country of the transferor affiliate and are used in comparison with the tax rate prevailing in the country in which the transferee affiliate is located. In other words, the country of the transferor affiliate is said to be a *high-tax* one if the rate of tax prevailing therein is higher than that prevailing in the country in which the transferee affiliate is located.

The mark-up policy of the transferor affiliate may be of three types: normal mark-up, high mark-up and low mark-up. But for international transfer pricing the policy followed is either a *high-mark-up* policy or a *low-mark-up* policy. A *high-mark-up* policy is one that charges a high transfer price, whereas under a *low-mark-up* policy a low transfer price is set. In a *high-mark-up* policy, the margin content of the transfer price is higher than that under *normal-mark-up* and in a *low- mark-up* policy, the margin content of the transfer price is lower than that under the *normal-mark-up*. If the country in which the transferor affiliate is located is a *low-tax* country, a *high-mark-up* policy is followed, whereas a *low-mark-up* policy is followed when the transferor country is a *high-tax* country. So it is the tax status of the transferor country (high-tax/low-tax) that determines the transfer pricing policy to be followed. The objective of the mark-up policies (high/low) adopted is to pay tax at a lower rate on a big margin and at a higher rate on a small margin, so that the overall tax liability is lower than that under a *normal-mark-up* policy. For example, when in a *low-tax* country, a *high-mark-up* policy is adopted, the reported margin of the transferor country is increased, on which tax is paid at a low rate and in the transferee country, as a result of this high transfer price, the reported margin gets reduced on which tax is paid at a high rate. This causes shifting of tax revenue from the *high-tax* country to the *low-tax* country, i.e., enrichment of one country at the cost of another. Not only that, earnings of the shareholders of the *low-tax* country will get enriched by a part of the earnings of the shareholders of the *high-tax* country. This effect on EPS combined with the performance appraisal of subsidiaries based on such misleading reported income, may give a misleading signal to share price. But when countries of both the transferor and the transferee affiliates have the same rate of tax, a high mark-up policy will show as much overall tax liability as that under a low mark-up policy. Thus the choice of mark-up policy depends on the consideration of the tax rate of the country of the transferor affiliate and that of the transferee affiliate.

The following **Exhibits** explain the contents of the above discussion.

**Exhibit I**

**When tax rate in both the countries is same**

| *Normal mark-up policy* | *Transferor Affiliate* | *Transferee Affiliate* | *Consolidated Company* |
|---|---|---|---|
| *Revenue* | Rs. 4,500 | Rs. 6,400 | Rs. 6,400 |
| *Cost of goods sold* | Rs. 2,500 | Rs. 4,500 | Rs. 2,500 |
| *Gross profit* | Rs. 2,000 | Rs. 1,900 | Rs. 3,900 |
| *Other expenses* | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| *Income before tax* | Rs. 1,400 | Rs. 700 | Rs. 2,100 |
| *Taxes (40%/ 40%)* | Rs. 560 | Rs. 280 | Rs. **840** |
| *Net income* | Rs. 840 | Rs. 420 | Rs. 1,260 |
| *Low mark-up policy* | *Transferor Affiliate* | *Transferee Affiliate* | *Consolidated Company* |
| *Revenue* | Rs. 4,000 | Rs. 6,400 | Rs. 6,400 |
| *Cost of goods sold* | Rs. 2,500 | Rs. 4,000 | Rs. 2,500 |
| *Gross profit* | Rs. 1,500 | Rs. 2,400 | Rs. 3,900 |
| *Other expenses* | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| *Income before tax* | Rs. 900 | Rs. 1,200 | Rs. 2,100 |
| *Taxes (40%/ 40%)* | Rs. 360 | Rs. 480 | **Rs. 840** |
| *Net income* | Rs. 540 | Rs. 720 | Rs. 1,260 |
| *High mark-up Policy* | *Transferor Affiliate* | *Transferee Affiliate* | *Consolidated Company* |
| *Revenue* | Rs. 5,000 | Rs. 6,400 | Rs. 6,400 |
| *Cost of goods sold* | Rs. 2,500 | Rs. 5,000 | Rs. 2,500 |
| *Gross profit* | Rs. 2,500 | Rs. 1,400 | Rs. 3,900 |
| *Other expenses* | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| *Income before tax* | Rs. 1,900 | Rs. 200 | Rs. 2,100 |
| *Taxes (40%/ 40%)* | Rs. 760 | Rs. 80 | **Rs. 840** |
| *Net income* | Rs. 1,140 | Rs. 120 | Rs. 1,260 |

Thus overall tax liability remains same

**Exhibit II**

## When transferor country has a high tax rate

| ***Normal mark-up policy*** | ***Transferor Affiliate*** | ***Transferee Affiliate*** | ***Consolidated Company*** |
|---|---|---|---|
| ***Revenue*** | Rs. 4,500 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 4,500 | Rs. 2,500 |
| ***Gross profit*** | Rs. 2,000 | Rs. 1,900 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 1,400 | Rs. 700 | Rs. 2,100 |
| ***Taxes (50%/ 40%)*** | Rs. 700 | Rs. 280 | Rs. **980** |
| ***Net income*** | Rs. 700 | Rs. 420 | Rs. 1,120 |
| ***Low mark-up policy*** | ***Transferor Affiliate*** | ***Transferee Affiliate*** | ***Consolidated Company*** |
| ***Revenue*** | Rs. 4,000 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 4,000 | Rs. 2,500 |
| ***Gross profit*** | Rs. 1,500 | Rs. 2,400 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 900 | Rs. 1,200 | Rs. 2,100 |
| ***Taxes (50%/ 40%)*** | Rs. 450 | Rs. 480 | Rs. **930** |
| ***Net income*** | Rs. 450 | Rs. 720 | Rs. 1,170 |
| ***High mark-up policy*** | ***Transferor Affiliate*** | ***Transferee Affiliate*** | ***Consolidated Company*** |
| ***Revenue*** | Rs. 5,000 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 5,000 | Rs. 2,500 |
| ***Gross profit*** | Rs. 2,500 | Rs. 1,400 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 1,900 | Rs. 200 | Rs. 2,100 |
| ***Taxes (50%/ 40%)*** | Rs. 950 | Rs. 80 | Rs. **1,030** |
| ***Net income*** | Rs. 950 | Rs. 120 | Rs. 1,070 |

Overall tax liability is minimum when low mark-up policy is followed

**Exhibit III**

## When, transferor country has a low tax rate

| *Normal mark-up policy* | *Transferor Affiliate* | *Transferee Affiliate* | *Consolidated Company* |
|---|---|---|---|
| ***Revenue*** | Rs. 4,500 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 4,500 | Rs. 2,500 |
| ***Gross profit*** | Rs. 2,000 | Rs. 1,900 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 1,400 | Rs. 700 | Rs. 2,100 |
| ***Taxes (40%/ 50%)*** | Rs. 560 | Rs. 350 | Rs. **910** |
| ***Net income*** | Rs. 840 | Rs. 350 | Rs. 1,190 |
| ***Low mark-up policy*** | ***Transferor Affiliate*** | ***Transferee Affiliate*** | ***Consolidated Company*** |
| ***Revenue*** | Rs. 4,000 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 4,000 | Rs. 2,500 |
| ***Gross profit*** | Rs. 1,500 | Rs. 2.400 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 900 | Rs. 1,200 | Rs. 2,100 |
| ***Taxes (40%/ 50%)*** | Rs. 360 | Rs. 600 | Rs. **960** |
| ***Net income*** | Rs. 540 | Rs. 600 | Rs. 1,140 |
| ***High mark-up policy*** | ***Transferor Affiliate*** | ***Transferee Affiliate*** | ***Consolidated Company*** |
| ***Revenue*** | Rs. 5,000 | Rs. 6,400 | Rs. 6,400 |
| ***Cost of goods sold*** | Rs. 2,500 | Rs. 5,000 | Rs. 2,500 |
| ***Gross profit*** | Rs. 2,500 | Rs. 1,400 | Rs. 3,900 |
| ***Other expenses*** | Rs. 600 | Rs. 1,200 | Rs. 1,800 |
| ***Income before tax*** | Rs. 1,900 | Rs. 200 | Rs. 2,100 |
| ***Taxes (40%/ 50%)*** | Rs. 760 | Rs. 100 | Rs. **860** |
| Net income | Rs. 1,140 | Rs. 100 | Rs. 1,240 |

Overall tax liability is minimum when high mark-up policy is followed.

**At a glance**

## COMPANY-LEVEL ANALYSIS

### Choice of mark-up policy

| Mark-up policy | *Overall tax liability* | | |
|---|---|---|---|
| | Equal tax rate in both countries | Tax rate in transferor country | |
| | | higher | lower |
| Normal | Rs. 840 | Rs. 980 | Rs. 910 |
| Low | Rs. 840 | **Rs. 930** | Rs. 960 |
| High | Rs. 840 | Rs. 1,030 | **Rs. 860** |

### Transfer pricing policy and its impact on tax liability at a glance

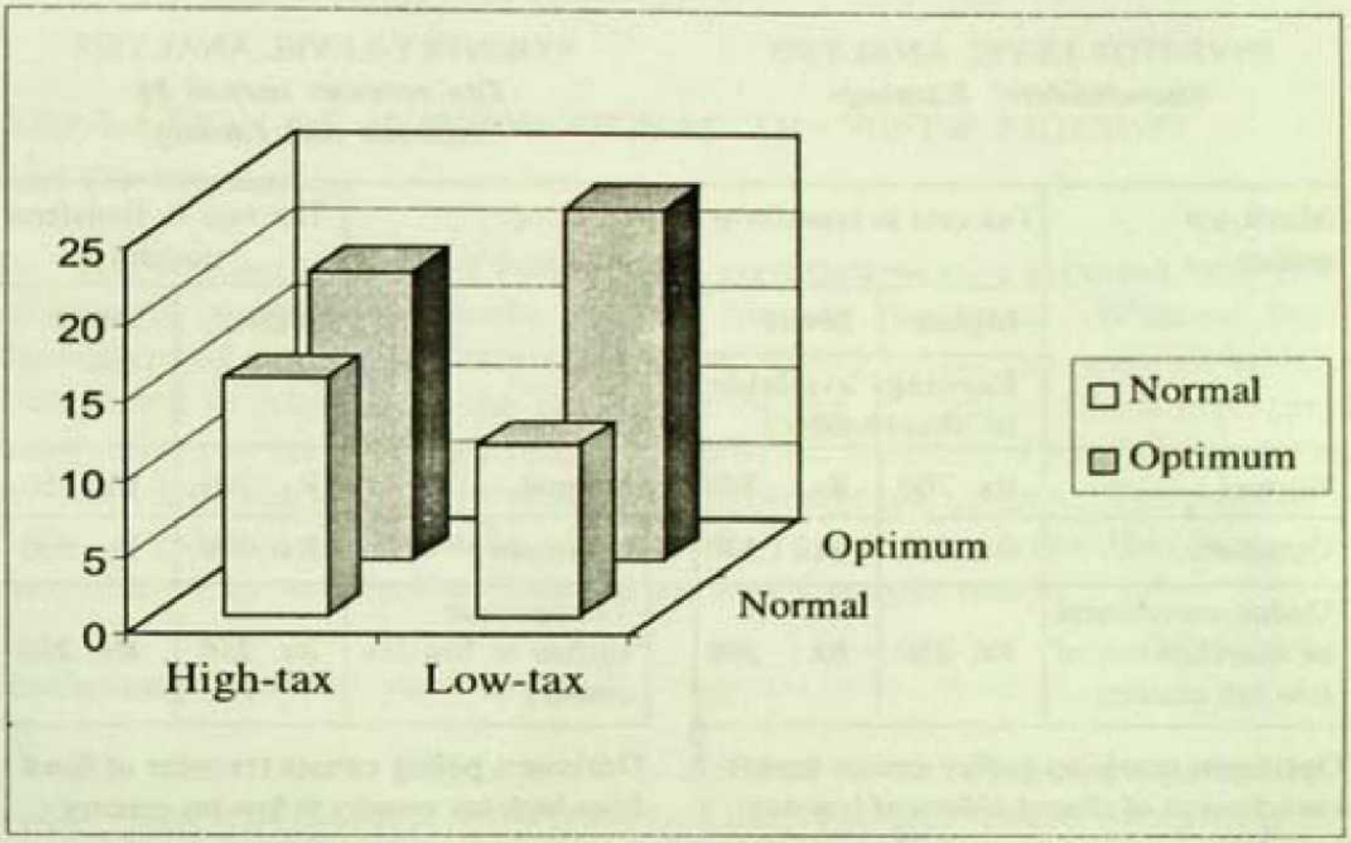
| *Country of the transferor affiliate* | *Country of the transferee affiliate* | *Transfer pricing policy followed* | *Impact on overall tax liability* |
|---|---|---|---|
| Tax rate x% | Tax rate x% | High/Low/Normal mark-up | Tax liability same |
| **High tax rate** | Low tax rate | **Low mark-up** | **Tax liability minimised** |
| **Low tax rate** | High tax rate | **High mark-up** | **Tax liability minimised** |

Choice of policy exists only when tax rates are different

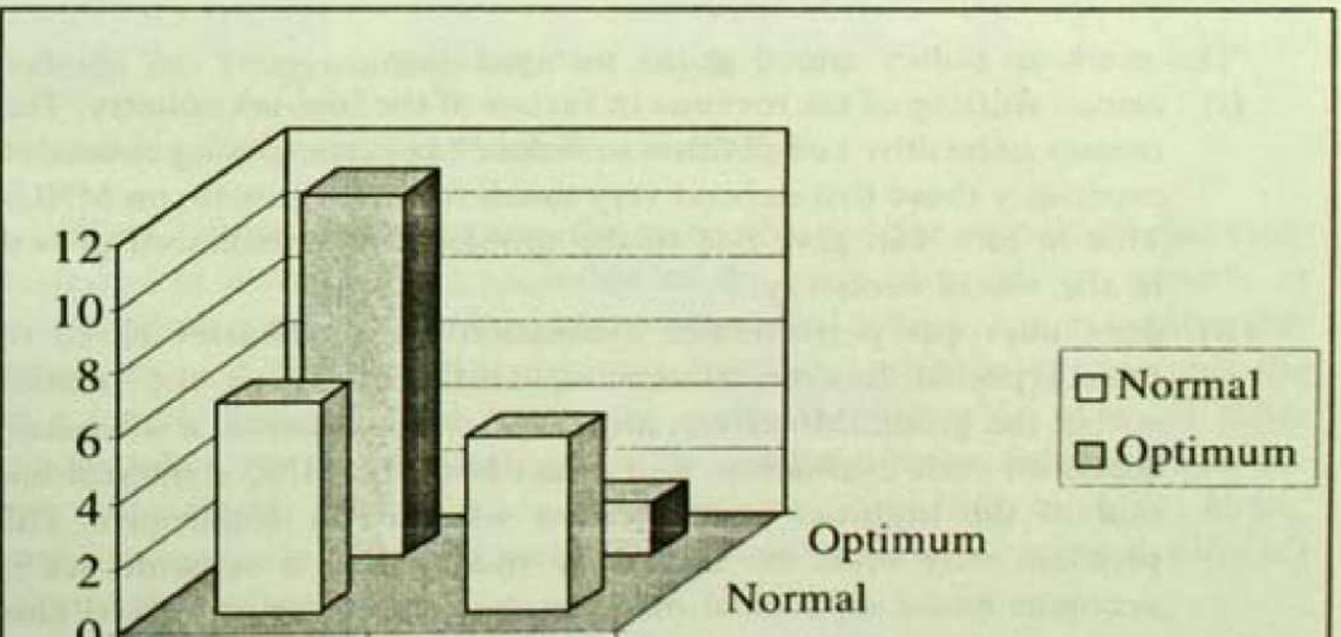
### Performance (Net profit/ Revenue) Appraisal of subsidiaries

| **Mark-up policy** | **Tax rate of Transferor Country is Higher** | | **Tax rate of Transferor Country is Lower** | |
|---|---|---|---|---|
| | **Performance of Transferor subsidiary** | **Performance of Transferee subsidiary** | **Performance of Transferor subsidiary** | **Performance of Transferee subsidiary** |
| Normal | 15.55% | 6.56% | 18.67% | 5.47% |
| Optimum | 11.25% | 11.25% | 22.8% | 1.56% |

**Performance of Transferor Company**



**Performance of Transferee Company**



**Optimum policy as to tax minimization is sub-optimal as to performance evaluation.**

INVESTOR-LEVEL ANALYSIS
***Shareholders' Earnings***

| **Mark-up policy** | **Tax rate in transferor** | |
|---|---|---|
| | **higher** | **lower** |
| | **Earnings available to shareholders** | |
| Normal | Rs. 700 | Rs. 840 |
| Optimum | Rs. 450 | Rs. 1,140 |
| Undue enrichment of shareholders of low-tax country | ***Rs. 250*** | ***Rs. 300*** |

**Optimum mark-up policy causes undue enrichment of shareholders of low-tax country**

COUNTRY-LEVEL ANALYSIS
***Tax revenue earned by high-tax rate country***

| Mark-up policy | Tax rate in transferor country | |
|---|---|---|
| | **higher** | **lower** |
| Normal | Rs. 700 | Rs. 350 |
| Optimum | Rs. 450 | Rs. 100 |
| Tax revenue shifted to low-tax country | ***Rs. 250*** | ***Rs. 250*** |

**Optimum policy causes transfer of fund from high-tax country to low-tax country**

**Observations:**

The mark-up policy aimed at tax minimization:

(i) causes shifting of tax revenue in favour of the low-tax country. This creates unhealthy competition to reduce tax rates, among countries, especially those that depend very much for their growth, on MNCs. This in turn will give rise to the problems of unbalanced growth in the world economy.

(ii) does improper performance evaluation of subsidiaries based on their reported Income Statement. This will distort the relation within the group. Moreover, any decision to withdraw a subsidiary based on such evaluation, will affect both the MNC's interest and that of the high-tax country from which it is withdrawn. This problem may often be solved by maintaining a separate set of accounts based on normal mark-up, but only at an increased cost.

(iii) causes undue enrichment of the earnings of the shareholders of the subsidiary located in the *low-tax* country, at the cost of the lower EPS of the shareholders of the subsidiary located in the *high-tax* country.

(iv) is quite likely to give a wrong signal to the investors about the future prospects of the concerned subsidiary through misleading performance evaluation and EPS.

## REGULATION OF INTERNATIONAL TRANSFER PRICING

### Need for regulation

The conflict of interest between the government of a *high-tax* country and that of an MNC is at the root of framing regulation. Whereas the government of a country is interested in increasing its tax revenue, an MNC is interested in minimizing the tax outlay. So the government of a high-tax country charges tax at a high rate, but the MNC adopting a low/high-mark-up policy deprives the government of its legitimate tax revenue. The purpose of the regulation is to make the transfer price free from the bias of manipulation by setting the price on an arm's length basis.

### Arm's length price

The term "arm's length price" is defined to mean a price applied in uncontrolled conditions. It is the price that the transferor would have charged had the transferee been an unrelated buyer. In other words it refers to the market value of a particular transaction ignoring the impact on pricing due to existence of special relationship between associated enterprises.

### Methods for Determining Arm's Length Price

*Comparable Uncontrolled Price Method (CUP)*

The CUP method compares the price charged for property or services transferred in a controlled transaction to the price charged for property or services transferred in a comparable uncontrolled transaction in comparable circumstances. CUP method is the most direct and reliable way to apply the arm's length principle and hence the same is preferable over all other methods wherever it is possible to locate comparable uncontrolled transactions. Adjustments may be made for differences in quality, quantity, terms, transportation costs and other factors. This method is however very difficult to apply in practice.

*Resale Price Method (RPM)*

The resale price method begins with the price at which a product that has been purchased from an associated enterprise is resold to an independent enterprise. For example, company A has sold a product to an associated company B at Rs.1,000. Company B has resold the same to an unrelated party X at a price of Rs.2,000. In order to arrive at arm's length price between A and B the price charged by B to X would be scrutinized. If reasonable profits in the hands of B are presumed at Rs.400 and expenses incurred by B amount to Rs.200, arm's length price between A and B will be Rs.1400 i.e., (2,000-600). There may be further adjustments due to customs duty, etc. While resale price method may require less product comparability, it is a fact that closer comparability of products will produce better results. The factors to be considered in this method are level of costs, value addition at each stage, time frame of resale, computation of gross margin, etc.

### *Cost plus Method (CPM)*

In the Cost plus Method, first the cost incurred by the supplier of goods or services is determined. An appropriate cost plus mark-up is then added to the cost, to arrive at an appropriate profit in the light of the functions performed and market conditions. The resultant figure is the arm's length price. So essentially, CPM involves comparability of gross margins earned by suppliers in uncontrolled transactions. This method is useful for sale of semi-finished goods, rendering of services, etc.

### *Comparable Profits Method (CPM)*

This method was introduced in the USA by revised transfer pricing regulations. The underlying assumption is that similarly situated tax-payers should earn similar returns over reasonable time periods. This method relies on comparability in factor or capital markets rather than strict equivalency in functional or product content. Reasonable similarity in functions and product markets are desirable. One important variation of this method is the *return on capital employed* (ROCE). In this variant, the ratio of operating income to average capital employed of the comparable is compared with the ROCE of the company in question.

Under this method adjustments have to be made for any differences between the comparables for factors such as differences in sales conditions, differences in cost of capital, foreign exchange risk, differences in accounting measurement practices, etc.

### *Profit Split Method (PSM)*

This method is applicable where transactions are so inter-related that they cannot be evaluated separately for the purpose of determining arm's length price of any one transaction. There are two variations of the profit split method. Under one variant of this approach, the *comparable profit split* method, the profit generated by a related party transaction is divided in the same way as those applicable to similar types of uncontrolled enterprises.

A more sophisticated method is *the residual profit split* method. Under this method, first the routine functions performed by the parent and subsidiaries are priced using relevant benchmarks. Any difference between the total profits earned by the affiliated enterprises and those attributable to the routine functions is considered as residual profits. Then the residual profit so determined is split between the associated enterprises on the basis of functions performed, assets employed or to be employed and risks assumed by each enterprise. Such contribution is valued to the extent possible by any available reliable external data.

### *Transactional Net Margin Method (TNMM)*

In case of this method, the net profit margin realised by the enterprise from an international transaction entered into with an associated enterprise is computed in relation to costs incurred or sales effected or assets employed or to be employed in the enterprise or having regard to any other relevant base. Such net margin then may be compared with a comparable uncontrolled transaction, which the tax-payer has entered into with an unrelated enterprise (internal comparison). If this is not possible, net margin that would have been earned in comparable transactions by an independent enterprise may be compared (external comparison). Thus, TNMM operates in a manner similar to cost plus and resale price methods.

### *Other Unspecified Methods*

If none of the above methods are found to be suitable to arrive at arm's length price, some suitable method is to be used.

## WORLD SCENARIO

Different countries have framed regulations. But the rigor applied in monitoring the transfer pricing policies of MNCs varies worldwide. German authorities are most rigorous, followed by those in the United States, France, the United Kingdom, and Canada. Japan and a host of countries, such as Korea, Australia, Italy, Ireland, Puerto Rico, and the like – countries which are eager to attract foreign investment and therefore charge tax at low rates

– do not show much interest in transfer pricing issues. A brief discussion of the regulations in a selected number of countries is presented below:

### United States

Section 482 of the Internal Revenue Code gives the Secretary of the treasury the authority to reallocate gross income, deductions, credits, or allowances between related corporations in order to prevent tax evasion. The provision reads as below:

In any case of two or more organizations, trades, or businesses (whether or not incorporated, whether or not organized in the United States, and whether or not affiliated) owned or controlled directly or indirectly by the same interest, the Secretary or his delegate may distribute, apportion, or allocate gross income, deductions, credits, or allowances between or among such organizations, trades, or businesses, if he determines that such distribution, apportionment, or allocation is necessary in order to prevent evasion of taxes or clearly to reflect the income of any such organizations, trades, or businesses.

It requires arm's-length pricing and requires that the methods described in Section 38.4, namely the comparable uncontrolled price method, the resale price method, the cost-plus method, or some other method be used to establish arm's-length pricing.

### Canada

Subsection 69(2) of the Income Tax Act provides that, where an amount payable by a Canadian taxpayer to a related non-resident person for goods and services is greater than an amount reasonable had the parties been dealing at arm's length, the deduction allowed is restricted to a reasonable amount. Moreover, Section 69(3) provides that a reasonable amount must be included in a Canadian taxpayer's income where it charges a related non-resident person for goods and services.

### Germany

Section 1 of the Foreign Tax law provides for the reallocation of the domestic source income between related persons if this income has been shifted abroad through transactions different from those that would have been entered between unrelated parties.

Section 8(3) of the Corporation Tax Law states that, in the determination of a company's taxable income, constructive dividends cannot be deducted.

### United Kingdom

Section 770 of the 1988 Taxes Act allows the U. K. Inland Revenue to adjust the taxable income of the U. K. party in any transaction with an overseas affiliate to the amount that would have resulted if the transaction had been on an arm's length basis.

### India

In India Sections 92 to 92F in the Income Tax Act contain provisions to prevent international transfer pricing malpractices. The main emphasis is on setting the transfer price on Arm's Length basis. The intention is to give a statutory framework to computation of profit, which is reasonable, fair and equitable. To see that the profits chargeable to tax in India do not get diverted elsewhere by altering the prices charged and paid in intra group transactions with the ultimate object of prevent erosion of Indian tax revenue.

## CONCLUSION

The government of the host country will have to balance the advantages of receiving FDI and the cost associated with the loss of tax revenue. Increased governmental revenues from transfer pricing regulations may be minor compared to the benefits in the form of employment, technology transfers, indirect taxes, exports etc., that multinational companies provide to the host countries. Governments being worried about the economic and social consequences of the transfer pricing policies adopted by the MNCs, called for closer international cooperation to deal with tax avoidance. This cooperation has taken the shape of a multilateral treaty on mutual assistance (COMAT), drafted jointly by the Council of Europe and the Organisation for Economic Cooperations and Development, to exchange information among national tax authorities.

At the same time the MNCs do not like to impair their long-term standing in the market by entering into hostilities with the host Governments. Advance Pricing Agreement (APA) – a formal agreement by the MNC with the revenue authorities abroad to determine in advance how its related party transactions should be priced for tax purposes, is the outcome of such effort on the part of the MNC.

Considering the benefits (employment, technology, indirect tax revenues etc.) that multinational corporations provide, most host governments would not like to sacrifice these for an ideal arm's length price. So what is desirable is a new set of limits on transfer pricing policy based on practical compromises by the host countries and MNCs that will be beneficial for both.

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# Double Taxation Avoidance Agreement (DTAA) with Special Reference to Double Taxation Relief

**Shubhayan Basu***

## Abstract

Income of a tax payer can be taxed on the basis of source of income and once again on the basis of residence. Such double taxation arises due to cross border commercial relationship. Double Taxation Avoidance Agreement (DTAA) addresses such a situation of double taxation.

In this article, an attempt has been made to have an overview of DTAA with an emphasis on methods of elimination of double taxation as well as on double taxation relief under Income Tax Act, 1961.

***Key words*** : Double Taxation; Double Taxation Avoidance Agreement; Double Taxation Relief; Underlying Tax Credit, Tax Sparing.

## 1. INTRODUCTION

With the rapid stride of globalization, there arises cross-border transfer of capital, technology which in turn increases the importance of international taxation. As a result of cross-border business, the income of an assessee may be subject to double taxation, once on the basis of income and again on the basis of residence. Double Taxation Avoidance Agreement (DTAA) addresses such a situation of double taxation. To avoid the double taxation, reliefs are provided under the DTAA and also under local legislation (In India Section 90 and Section 91 deal with such relief). The objective of the paper is to have an overview of DTAA with an emphasis on methods used for the elimination of double taxation. The concept of double taxation is briefly focused in section 2. Section 3 deals with an overview of DTAA. In section 4 we deal with the general concepts of Double Taxation Relief while section 5 deals with Provisions of Double Taxation Relief under Income Tax Act

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1961. Section 6 briefly addresses issues relating to application of DTAA. Concluding remarks are made in the last section.

## 2. DOUBLE TAXATION – A BRIEF CONCEPT

A cross-border commercial relationship may result in income arising out of such transactions, which could be subject to tax in both the countries depending on the basis of connecting factors. As per conventional understanding, every taxpayer is close to his/her home country on the basis of residence and as a result home country can charge tax on income. Income of such taxpayer may be taxed in some other country on the basis of source of income.

Double taxation thus means taxing of same income in the hands of taxpayer twice - (i) on the basis of residence; (ii) on the basis of source.

It is an international practice that the residence country possesses the right to tax the global income of a tax payer. Sections 4 and 5 of Income Tax Act, 1961, also suggest the same view. However, Supreme Court in a recent case of *CIT VS P.V.A.L. Kulandagan Chettiar [267 ITR 654]* added a new dimension. It raises an issue whether the Court has expressed a wholly or partially different view in respect of prevalent international practice. It also raises a few questions like –

(a) Whether economic relationship in isolation is a determinative factor?

(b) How the fiscal domicile of a person who has plantations and properties in more than one country be ascertained?

(c) Will the international community regard this decision as a departure from traditional thinking?

There may be double taxation also on the basis of dual residence and in that case "tie breaker test" is to be applied to determine the residence. Such test is only applicable in case of an individual under Article 4(2) of model convention. The tie-breaking rule is discussed as follows –

- An assessee should be deemed to be resident of a country where the assessee has permanent home.
- If the assessee has permanent home in both the countries, residential status will depend on the proximity of personal and economic relation.
- If determination of above proximity is not possible or the assessee does not have a permanent home in either country, the assessee will deem to be resident of the country in which he has a habitual abode.
- If he has habitual abode in both the countries or in neither of them, residential status will depend on nationality.

- If he is a national of both the countries, the competent authorities of the two contracting countries should settle the issue by mutual agreement.

There are two kinds of double taxation :

(a) *Juridical double taxation* : Taxation of income of same person twice. For instance, F Ltd., a French Company earns royalty from an Indian company. Such royalty income is taxable in India as well as in France.

(b) *Economic double taxation* : Two different persons are taxed in respect of same income. For instance, section 40A(3) of Income Tax Act provides that any payment in excess of Rs. 20000 must be paid either by crossed Cheque or by Demand Draft. In case of violation, 20% of the amount paid will be disallowed. However, despite such disallowance, the corresponding receipts are taxable in the hands of the recipient.

## 3. DOUBLE TAXATION AVOIDANCE AGREEMENT (DTAA) - AN OVERVIEW

DTAA is an agreement between two countries (known as contracting states) defining the rights of the concerned countries for taxing the income when the source country and the residence country are different. Internationally it is also known as Double Taxation Convention. Such agreements or treaties are negotiable, and have entered into a political level having several considerations. A DTAA normally provides relief for juridical double taxation and not economic double taxation (except on transfer pricing).

A DTAA may be :

(a) *Comprehensive DTAA* which deals with all the possible sources of income;

(b) *Limited DTAA, which* deals with only certain sources of income like income from operation of ships or aircrafts.

There may be several objects for which two countries may enter into the DTAA. Some important objectives may be as follows:

(a) To allocate fiscal jurisdiction.

(b) To prevent evasion of tax through exchange of information.

(c) To eliminate discrimination in taxation.

(d) To promote business and investments between two countries.

(e) To share tax revenue.

The objectives of entering into a DTAA differ from the point of view of taxpayer and Government. Avoidance of double taxation and prevention of tax evasion may be the objectives of Government while guidance and certainty of tax treatment in the foreign country besides avoidance of double taxation may be the objectives of a taxpayer.

A DTAA contains several articles. Each article deals with a particular subject—matter like resident, Permanent Establishment, mode of taxability of different types of income etc. Such articles may be grouped under different provisions. **Philip Baker** categorized the various articles of DTAA into six groups –

(i) Provisions governing the scope of DTAA;
(ii) Definition provisions;
(iii) Substantive provisions;
(iv) Provisions for elimination of double taxation;
(v) Anti-avoidance provisions;
(vi) Miscellaneous provisions.

The following table will help us to understand the categorisation of various articles.

**Categorisation of Articles**

| **Types of Provisions** | **Article numbers** |
|---|---|
| Scope | 1, 2, 30, 31 |
| Definition | 3, 4, 5 |
| Substantive | 6-8, 10-22 |
| Anti Avoidance | 9, 26 |
| Elimination of double taxation | 23, 25 |
| Miscellaneous | 24, 27, 28, 29 |

Tax treaties among different countries are based on different models like -

(1) *OECD model* :(First drafted in 1963 and revised periodically.) It is conceived as a model between the developed countries and the thrust is on residence-based taxation. The latest one is 2005 version.
(2) *UN model* : (First drafted in 1980 and subsequently revised in 2001.) It is conceived as a model between developed and developing countries and the thrust is on source-based taxation.
(3) *US model* : US treasury published this model in 1977. The current one is 1996 version.
(4) There are certain other models developed by countries like Netherlands, Andean etc.

There are similarities as well as differences between two major internationality accepted models – OECD model and UN model. One instance of similarity is Article 1 (persons covered). The wording of Article 1 in the OECD and UN model are identical. However, if we compare the same with US model, we find the US model has an additional provision which provide that irrespective of the residential status of a person, the contracting state would have the right to tax even former citizens who have given up their citizenship to avoid tax.

A few instances of differences among the major two models are discussed in brief as follow -

- Article 3 : OECD model defines enterprise and business which are not defined by UN model.
- Article 5 : The site, construction or installation project will be taken as Permanent Establishment (PE) under OECD model if those items last for more than 12 months. This period in UN model is more than 6 months.
- Article 7 : Under OECD model, business profit attributable to PE can be taxed by source country. While under UN model the source country can tax the profit whether attributable to PE or not.
- Article 8 : There are two alternatives under UN model. Under OECD models there are no alternatives.
- Article 10 : The rate of tax on dividend under certain cases shall not exceed 5% under OECD model. Under UN model it is to be established through bilateral negotiation.
- Article 11 : The rate of tax on interest under certain cases shall not exceed 10% under OECD model. Under UN model it is to be established through bilateral negotiation.
- Article 13 : There is no provision in OECD model in case of gains derived from alienation of shares as mentioned in UN model.
- Article 18 : OECD model deals only with pensions from private employment and excludes pension received due to unemployment under social security scheme as mentioned under UN model.

## 4. DOUBLE TAXATION RELIEF

It is a universally accepted principle that the same income should not be subject to double taxation. DTAA attempts to resolve the problem of double taxation by incorporating mechanism for avoidance of double taxation. This is known as elimination of double taxation or double taxation relief. It is bilateral in nature. There are two methods for elimination of double taxation.

(a) *Exemption Method* : Subject to certain conditions, the residence country grants exemption in respect of income of a tax payer that arises in a source country. It is preferred by the developing countries. This method has two variations :

(i) *Full exemption* : Resident country allows full exemption in respect of income earned in source country,

(ii) *Exemption with progression* : Exemption is provided in case of income of a source country but such income is considered for rate purpose.

**Case Study-1**

**Exemption Method**

| | |
|---|---|
| Income in residence country (Rs.) | 1,40,000 |
| Income in source country (Rs.) | 60,000 |

Tax rate

Residence Country

| | |
|---|---|
| For Income upto Rs.1,50,000 | 10% |
| For Income exceeding Rs.1,50,000 | 20% |
| Source Country | 15% |

| | Without exemption | Full exemption Progression | Exemption with |
|---|---|---|---|
| a. Tax payable in residence country. | 40,000 (20% of Rs.2,00,000) | 14,000 (10% of Rs.1,40,000) | 28,000 (20% of Rs.1,40,000) |
| b. Tax payable in source country. | 9,000 | 9,000 | 9,000 |
| c. Total tax payable [(a)+(b)] | 49,000 | 23,000 | 37,000 |
| d. Effective rate of tax (on total income) | 24.5% | 11.5% | 18.5% |

(b) *Credit Method* : Residence country grants credit to a tax payer for payment of tax in the source country. It is the most practiced method. This method has four variations -

(i) *Full credit* : Entire tax paid in the source country is allowed as credit by the residence country.

(ii) *Ordinary credit* : Residence country places restriction on credit to the extent of tax attributable to the income that is taxed in source country.

**Case Study-2 :**

## Credit Method

| | |
|---|---|
| Income in residence country (Rs.) | 1,40,000 |
| Income in source country (Rs.) | 60,000 |

| | |
|---|---|
| Tax rate | |
| Residence Country | |
| For Income upto Rs.1,50,000 | 10% |
| For Income exceeding Rs.1,50,000 | 20% |
| Source Country | 15% |

Residence country exempts 50% of income earned in source country.

| | Without credit | Full credit | Ordinary credit |
|---|---|---|---|
| a. Tax payable in residence country. | 40,000 | 40,000 | 40,000 |
| b. Tax payable in source country. | 9,000 | 9,000 | 9,000 |
| c. Gross credit for tax paid in source country | - | 9,000 | 9,000 |
| d. Tax payable in residence country on income of source country. [10% on Rs. 30,000] | - | - | 3,000 |
| e. Net credit for tax available in source country. | - | - | 3,000 |
| f. Net tax payable in residence country. | 40,000 | 31,000<br>[(a)- (c)] | 37,000<br>[(a)-(e)] |
| g. Total tax payable [(b) + (f)] | 49,000 | 40,000 | 46,000 |
| h. Effective rate of tax (on total income) | 24.5% | 20% | 23% |

(iii) *Underlying tax credit* : It is available only to a corporate assessee. It is provided to mitigate the double taxation of corporate profits. The concept of underlying tax credit may be explained through the following example: A Ltd., a resident company of country X (residence country) holds share of B Ltd., a resident company of Country Z (source country). B Ltd. declares dividend and A Ltd. receives share of such dividend. Underlying tax credit may be allowed by country X in respect of tax paid in country Z in proportion to the holding of A Ltd. in B Ltd.

(iv) *Tax Sparing* : In order to attract foreign investments, developing countries provide some fiscal incentives which may mean that a tax payer need not have to pay tax for certain period in the source country. In India, there are sections 10A, 10B, 10BA, 80IA, 80IB, 80IC of the Income Tax Act 1961 which provide tax holidays in respect of certain specified period. The benefit given by the source country in such cases are effectively enjoyed by the residence country instead of taxpayer. Since no tax is paid by the taxpayer in the source country, no credit will be given by the residence country. As a result the taxpayer has to pay high tax in the residence country. Hence, residence country gains on account of fiscal incentives given by the source country. To guard against such problem, countries may negotiate tax sparing through DTAA. This is achieved by giving credit for the taxes that would have been in absence of such tax holidays in the source country.

**Case Study-3**

### Underlying tax credit and tax sparing

| | Rs. |
|---|---|
| Profit before tax | 2,00,000 |
| Deduction U/S 80IC | 80,000 |
| Dividend declared | 40,000 |
| Tax rate | 30% |
| Dividend paid to a French company who holds 50% of equity share capital of Indian company. | |

| | Rs. |
|---|---|
| Profit before tax | 2,00,000 |
| Less : Deduction u/s 80IC | 80,000 |
| Taxable Profit | 1,20,000 |
| Less : Tax @ 30% | 36,000 |
| Profit after tax available for dividend | 84,000 |
| Dividend declared | 40,000 |
| Dividend paid to French Company (50%) | 20,000 |
| Underlying tax Credit (36,000 × 20,000 / 84,000) | 8,571 |
| Tax sparing (24,000 × 20,000 / 84,000) | 5,714 |
| Total tax credit | 14,285 |

## 5. DOUBLE TAXATION RELIEF UNDER INCOME TAX ACT, 1961.

India has DTAA with 69 countries. The Indian treaties predominantly operate on tax credit method for relieving double taxation. Income Tax Act, 1961 has provided double taxation relief as follows -

(a) *Bilateral relief [Sec.90]* : The Central Government is empowered to enter into an agreement with the Government of a foreign country to provide relief in respect of income on which tax is paid in source country and to avoid double taxation.

(b) *Unilateral relief [Sec 91]* : In case there is no DTAA with a foreign country, relief would be granted subject to fulfillment of the following conditions :

(i) Assessee must be a resident of India.
(ii) Income accrued or arisen outside India.
(iii) Assessee must paid tax on foreign income in the foreign country.

Relief U/S.91 is to be computed as follows -

Incomes subject to double taxation X Indian rate of tax or rate of tax in foreign country whichever is less.

**Case Study 4**

Total income of an assessee is Rs. 2,20,000 (including foreign income of Rs. 40,000); tax payable in India Rs. 19,380; tax deducted by source country Rs. 6,000.

(a) Rate of tax in India
(Rs. 19,380 ÷ Rs. 2,20,000) × 100 = 8.81%
(b) Rate of tax in foreign country
(Rs. 6,000 ÷ Rs. 40,000) × 100 = 15%
(c) Relief u/s 91 = 8.81% on Rs. 40,000 = Rs. 3,524
(d) Tax payable in India =
(Rs. 19,380 – Rs. 3,524) = Rs. 15,856

With effect from assessment year 2007-2008, newly inserted section **90A** provides that Central Government can adopt an agreement between specified associations in India and specified associations in the specified territory outside India for double taxation relief.

It may be relevant to note the following case laws and provisions under Income Tax Act.

(a) Where any foreign income taxed outside India is also eligible for deduction in computing total income in India, double taxation relief would be allowed only on income which form part of total income.
*[CIT vs Dr. R.N. Jhanji (185 ITR 586]*
(b) Provision of DTAA overrides the provision of the Act, to the extent these agreements are more favorable to the assessee.
*[CIT VS ITC Ltd. (82ITD 239)]*
(c) If provisions of the Act are more beneficial to an assessee, such beneficial provision will supersede the provision of DTAA [Sec 90(2)]

## 6. ISSUES ON APPLICATION OF DTAA

There may arise the following issues in relation to operation of DTAA -

(a) How DTAA will be operative in a triangular situation involving three countries?

In this case, neither the specific DTAA nor the model DTAA can solve such issue. This may be dealt with by the domestic law of the countries.

(b) Can DTAA impose higher burden in comparison to domestic law?

(c) Can a subsequent domestic legislation override the provisions of existing DTAA?

The domestic law of the countries can address such situations.

(d) What is the significance of a model convention while interpreting a DTAA?

Model conventions can be used as a guide in interpreting a DTAA.

(e) Whether double taxation or potential double taxation is pre-requisite for availing benefit under DTAA?
Presence of juridical double taxation is necessary.

## 7. CONCLUDING REMARKS

The Indian economy is opening and as a result international taxation has assumed great significance. In the modern world, DTAA is a necessity since double taxation hinders economic activity between nations. India has entered into double taxation avoidance agreement (both comprehensive and limited) with 69 countries. While drafting the model conventions with another country, Articles of different accepted models need to be considered. A DTAA may be amended. Instead of going for a fresh DTAA, it is generally amended through protocol (example, recent protocol amending India –Singapore DTAA). The local tax laws need to be drafted after considering double taxation conventions. While providing exemption for double taxation through local tax laws, it must be ensured that such exemptions must not be prejudicial to revenue. Care should be taken to counter the improper use or abuse of DTAA by including different anti-abuse provisions in model convention. In the present scenario of changes, one cannot remain ignorant about DTAA, which forms an important part of international taxation.

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